

JUN 8 2007

Draft Revised Environmental Assessment

COUNTY OF MAUI'S HANA LANDFILL AND LAND ACQUISITION

Prepared for:

**County of Maui,
Department of Public Works and
Environmental Management**

May 2007



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Executive Summary

Project Name: County of Maui's Hana Landfill and Land Acquisition

Type of Document: Draft Revised Environmental Assessment

Legal Authority: Chapter 343, Hawai'i Revised Statutes

Agency Determination: Finding of No Significant Impact

Applicable Environmental Assessment Review "Trigger":

- a. Use of State lands and County funds
- b. Work in the Conservation district

Location: TMK: (2) 1-3-06:12 (por.) and 07 (por.)
Hana
Maui Island

Applicant: County of Maui, Department of Public Works and Environmental Management

Approving Agency: County of Maui
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Project Summary: The County of Maui, Department of Public Works and Environmental Management (DPWEM), Solid Waste Division, seeks to expand the limits of its Hana Landfill facility, located in Hana, Maui, identified by Tax Map Key 1-3-006:12(por.). The DPWEM is in the process of acquiring an additional 45.14 acres of land (Tax Map Key 1-3-06:07 (por.)) from the State of Hawai'i (State) to incorporate an approximate 5.40-acre area of landfill encroachment immediately west of the existing Hana Landfill. In addition to the landfill encroachment, the DPWEM seeks to use the remaining 39.74 acres of State lands as a buffer zone and for

environmental monitoring. In 1969, the State Board of Land and Natural Resources (BLNR) approved a right-of-entry in favor of the County of Maui to utilize a portion of Parcel 12, approximately 29.05 acres in area along with a 20-ft. wide road easement thereto, for a garbage dump site. Since 1969, the Hana Landfill has served as the single disposal and recycling facility for the districts of Keanae, Nahiku, Hana, Kipahulu and Kaupo. Landfill operations in the late 80's and early 90's have resulted in a westward encroachment onto a portion of the adjacent State-owned land. The encroachment area is used for disposal of residential and light industrial waste. Accordingly, the DPWEM has initiated land acquisition proceedings with the State Department of Land and Natural Resources to integrate the 45.14-acre area, including the landfill encroachment, buffer zone and environmental monitoring areas, with the existing landfill site. DPWEM is also proposing to develop a 100 ft. by 100 ft. stormwater runoff detention basin downslope from the active landfill area to meet new Federal regulations pursuant to the Clean Water Act.

I. PROJECT OVERVIEW

I. PROJECT OVERVIEW

A. BACKGROUND

The County of Maui, Department of Public Works and Environmental Management (DPWEM), Solid Waste Division, seeks to expand the limits of its Hana Landfill parcel, located in Hana, Maui, identified by Tax Map Key 1-3-006:12(por.). See Figure 1. Access to the landfill site is provided by Waikaloa Road via Hana Highway. The DPWEM is in the process of acquiring an additional 45.14 acres of land (Tax Map Key 1-3-06:07 (por.)) from the State of Hawai'i (State) to incorporate an approximate 5.40-acre area of landfill encroachment immediately west of the existing Hana Landfill. See Figure 2. In addition to the landfill encroachment, the DPWEM seeks to use the remaining 39.74 acres of State lands as a buffer zone and for environmental monitoring. See Appendix "A".

In 1969, the State Board of Land and Natural Resources (BLNR) approved a right-of-entry in favor of the County of Maui to utilize a portion of Parcel 12, approximately 29.05 acres in area along with a 20-ft. wide road easement thereto, for a garbage dump site. See Appendix "B". Since 1969, the Hana Landfill has served as the single disposal and recycling facility for the districts of Keanae, Nahiku, Hana, Kipahulu and Kaupo. In 1984 the BLNR approved a request for issuance of an Executive Order placing the control and management of the portion of Parcel 12 to the County of Maui. See Appendix "C". The remaining portion of Parcel 12 is a strip of land, ranging in width from 300 ft. to 350 ft., between the eastern boundary of the landfill site and the Hana coastline. This State-owned portion of Parcel 12 is in the State Land Use Conservation district and is excluded from the right-of-entry and subsequent Executive Order. See Figure 3.

Landfill operations in the late 80's and early 90's have resulted in a westward encroachment onto a portion of the adjacent State-owned land. The encroachment area is used for disposal of residential and commercial waste. Refer to Figure 2. Accordingly, the DPWEM has initiated land acquisition proceedings with the State Department of Land and Natural Resources to integrate the 45.14-acre area, including the landfill encroachment, buffer zone and environmental monitoring areas, with the existing landfill site.

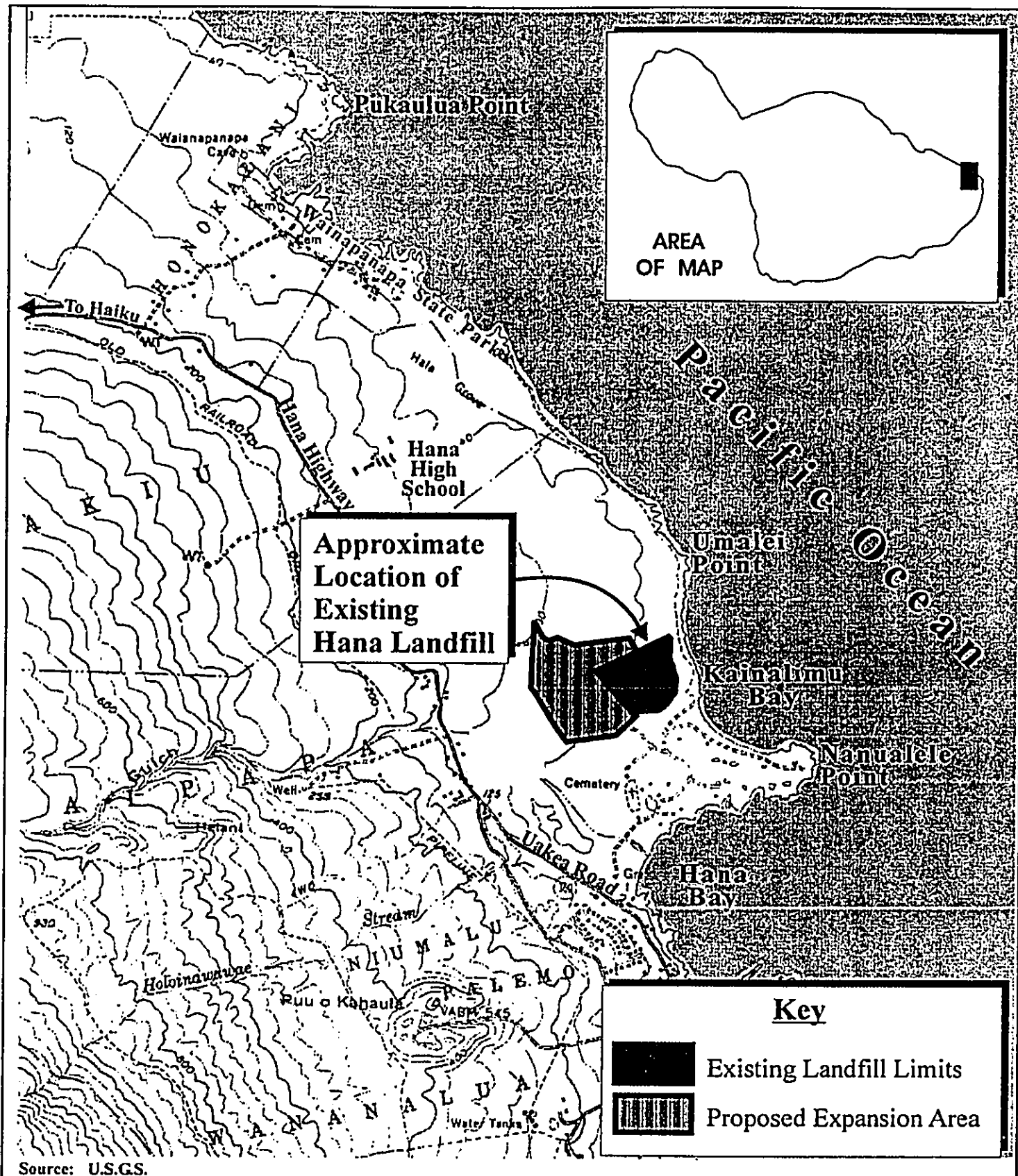


Figure 1

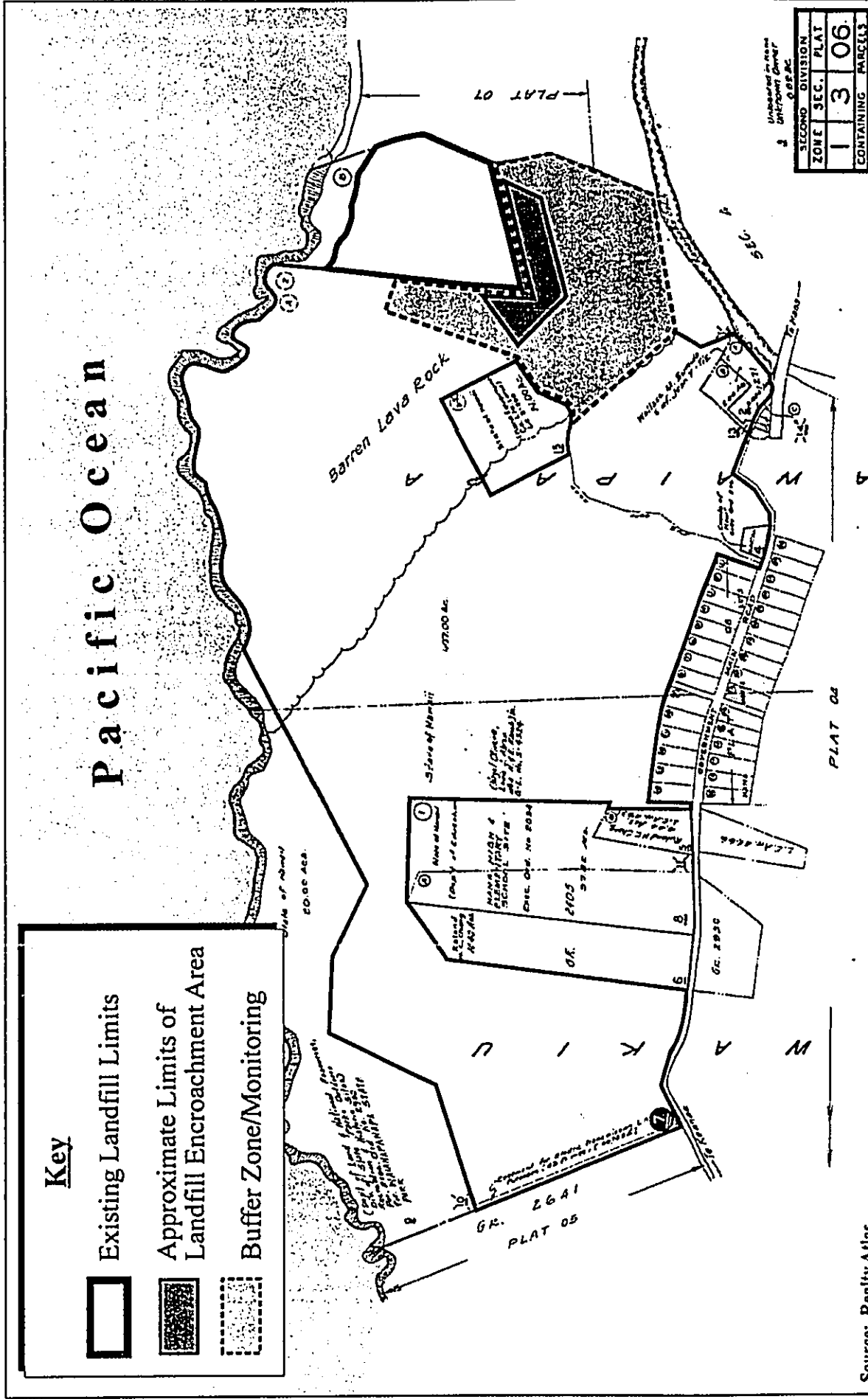
County of Maui's Hana Landfill Land Acquisition Regional Location Map



Prepared for: County of Maui, Department of Public Works
and Environmental Management

MUNEKIYO & HIRAGA, INC.

COM/DPWHanaLFRegional



B. EXISTING CONDITIONS

The Hana Landfill, in its current capacity, occupies a total land area of approximately 34.45 acres, which includes approximately 29.05 acres of Parcel 12 and 5.4 acres (encroachment area) of Parcel 7. The landfill facility includes three (3) operational components which include the waste collection areas, various environmental monitoring stations and the landfill office. See Figure 4. Each component of the landfill facility is described below.

1. Waste Receiving Areas

a. Residential and Light Commercial Waste (MSW)

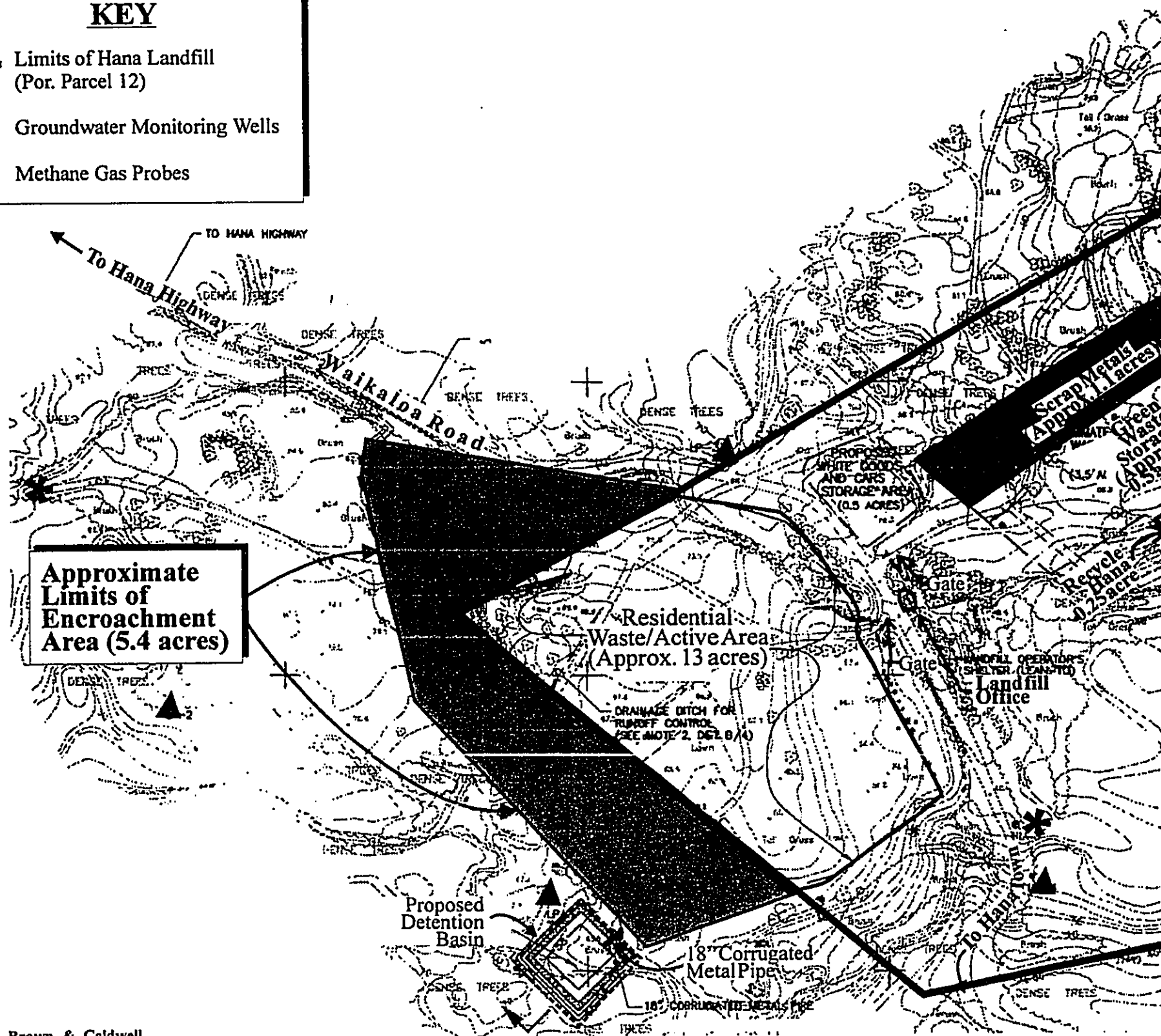
Residential and light commercial waste, commonly referred to as municipal solid waste (MSW), is received in the western portion of Parcel 12, including the area of encroachment on Parcel 7. This area includes the "active" or open waste receiving area, which typically is limited to a 50-foot by 100-foot land area. On average the site receives approximately four (4) tons of waste a day. Depending on site conditions and daily waste volumes received, the size of the MSW active area may be reduced by landfill staff in an effort to minimize windblown litter, infiltration of rainfall, control odors, vectors, and other nuisances. Within the MSW active area, waste is buried under cover material, typically consisting of cinder and/or soil. The landfill cover serves to eliminate odors, litter and air emissions, reduce potential for fires, and to improve the overall appearance of the facility.

b. Scrap Metal

Scrap metals are stored in the central portion of the landfill site, just north of the landfill office. The scrap metal storage area is approximately 1.1 acres in size and includes washers, dryers, refrigerators, water heaters and automobiles. The scrap metal is being stored onsite to eventually be transported to an off-island processing facility. In 2001, the volume of junk cars at the Hana Landfill increased significantly as the County of Maui worked to remove abandoned cars in East Maui as part of a regional dengue fever clean up project. The DPWEM is currently applying for County funds from the 2007/2008 budget to fund removal of existing junk cars.

KEY

- Limits of Hana Landfill (Por. Parcel 12)
- * Groundwater Monitoring Wells
- ▲ Methane Gas Probes

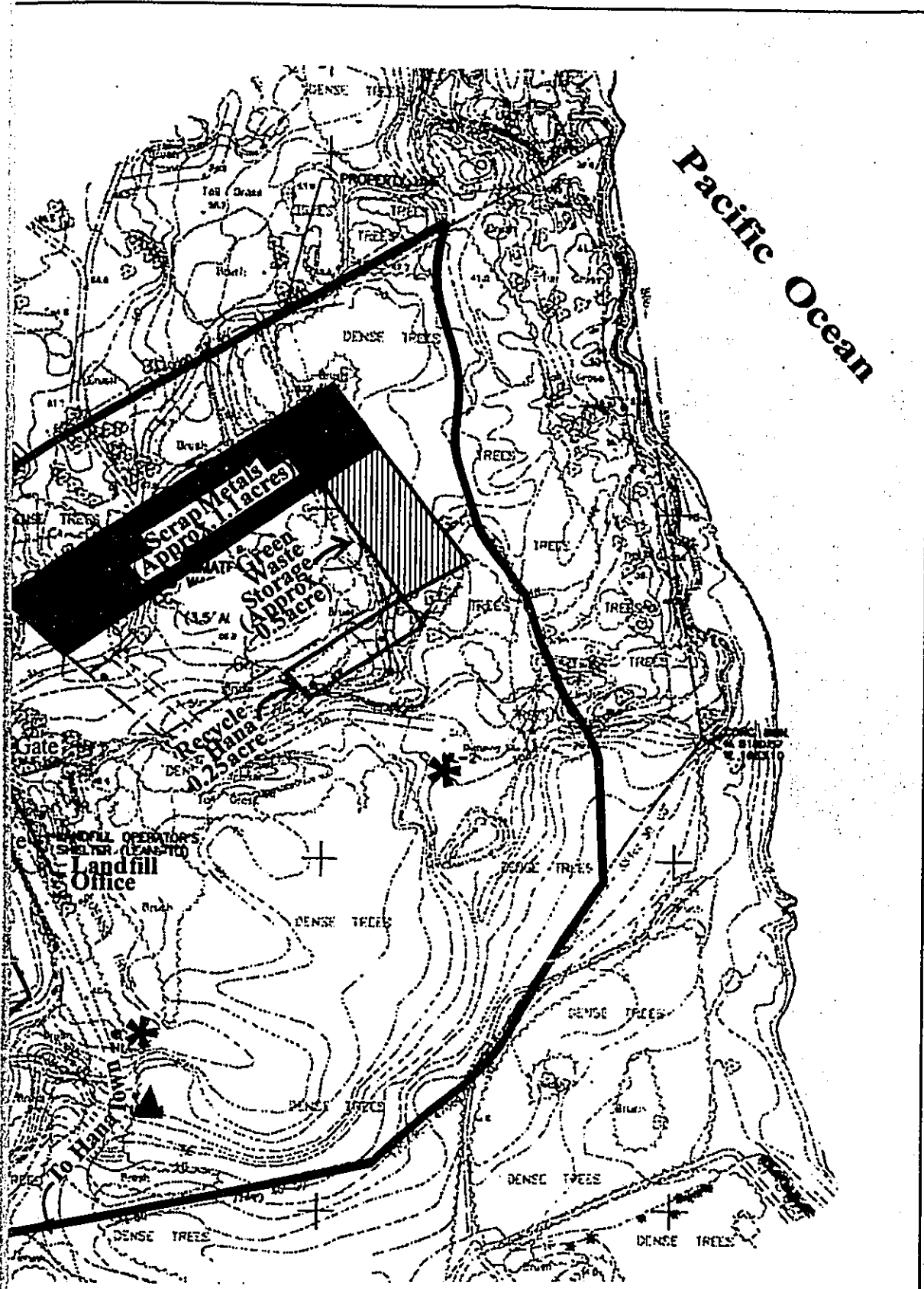


Source: Brown & Caldwell

Figure 4



County of Maui's Hana Landfill Land Acquisition Hana Landfill Site Plan



Land Acquisition Plan



MUNEKIYO & HIRAGA, INC.

COMDPWHanaLFSite Plan

c. **Biodegradable Materials**

Biodegradable materials are collected in the eastern portion of the landfill, in a land area approximately 3.5 acres in size. Tree clippings, leaves and stumps are separated and stored for decomposition.

d. **Recycle Hana**

Hana's only recycling facility is located just east of the operator's shelter, encompassing a land area of approximately 10,000 square feet. Receptacles are located to accept glass and used motor oil. Recycled materials are periodically removed from the site and recycled by the County of Maui.

2. **Environmental Monitoring Stations**

a. **Groundwater Monitoring Wells**

The Hana Landfill facility includes three (3) groundwater monitoring wells, two (2) located on Parcel 12, and one (1) located on Parcel 7. Refer to Figure 4. In accordance with the State of Hawai'i Department of Health Groundwater Monitoring Guidelines, the DPWEM utilizes the wells in completing semi-annual groundwater monitoring reports. To date, groundwater quality monitoring conducted at the Hana Landfill has indicated that none of the monitoring parameters were found outside the statistical control limits established for each well. Moreover, no visual signs were observed during the January 2007 monitoring event, indicative of release from the landfill to the groundwater. See Appendix "D".

b. **Methane Gas Probes**

Four (4) methane gas probes are located beyond the perimeters of the MSW landfill facility, designed to monitor methane concentrations along the landfill perimeters. Three (3) of the methane gas probes are located on Parcel 7, and one (1) probe is located on Parcel 12. Refer to Figure 4. The DPWEM, Solid Waste Division, in accordance with 40 CFR Part 258.24, completes monitoring of methane concentrations on a quarterly basis. To date, methane monitoring has not indicated the presence of methane gas at the project site. Methane readings are 0 on the 5 percent scale of the Gastech monitor for each of the three (3) wells since 1994.

3. **Landfill Office**

The landfill office is located in the central portion of the landfill facility, housing the two (2) full-time staff members, including an equipment operator and a landfill attendant.

C. **PROPOSED ACTIONS**

The DPWEM is proposing two (2) separate actions. The first action involves the boundary realignment of a portion of Parcel 12, consolidating approximately 45.14 acres of Parcel 7 into Parcel 12. Refer to Appendix "A". The second action involves the proposed grading of a 100-foot by 100-foot runoff detention basin. Each of the proposed actions are further described below.

1. **Realignment of Parcel 12 Boundaries**

Under the proposed boundary realignment, the Hana Landfill boundaries will be expanded in a north and west direction to incorporate an area of 45.14 acres. Refer to Figure 2. The landfill boundary realignment will incorporate three (3) methane monitoring wells and one (1) groundwater monitoring well.

2. **Grading of the Runoff Detention Basin**

In addition to the boundary line realignment, the DPWEM proposes grading activities to construct a 100-foot by 100-foot runoff detention basin, to be located southwest of the existing landfill facility, within the realigned landfill boundaries. Refer to Figure 4. The proposed runoff detention basin has been designed in accordance with 40 CFR Part 258.6, which requires that runoff from the active landfill area resulting from a projected 24-hour, 25-year storm be collected and contained so that discharges from the landfill do not violate provisions of the Clean Water Act.

Project plans call for the basin to be cut to a depth approximately 10 feet below the existing grade. See Section 10 of application document. Runoff from the active landfill area will be diverted to the detention basin via a system of shallow ditches and earthen berms. Because the active landfill area is relocated on a regular basis, the ditches and berms will be relocated as necessary to adequately convey the required runoff volumes.

In conjunction with the runoff detention basin, project plans call for installation of an 18-inch corrugated metal pipe, approximately 30-feet in length, which would convey runoff beneath the perimeter berm, discharging into the detention basin.

Construction of the detention basin will require the cut and grading of approximately 3,700 cubic yards of earthen material. Appropriate Best Management Practices (BMPs) will be instituted to ensure that grading activities do not result in adverse impacts to the surrounding environment. Construction of the detention basin will be completed by DPWEM staff, and is anticipated to take approximately 10 weeks to construct at an estimated cost of approximately \$80,000.00.

The proposed improvements are required to correct encroachment of landfill operations, provide buffer and environmental monitoring and to meet new Federal regulations. No substantial increases to daily loads are anticipated as a result of the proposed action.

Although the size of the landfill parcel and the runoff capacity area will increase as a result of the proposed actions, the DPWEM is not proposing to physically expand the limits of the existing Hana Landfill municipal solid waste receiving areas.

D. REQUIRED LAND USE ENTITLEMENTS

A portion of the "active" waste receiving encompassing an approximate 5.4-acre area encroaches upon Parcel 7. This portion of Parcel 7 is within the State Land Use Agricultural district and is county zoned Agricultural and Interim district. Pursuant to Maui County Code Section 19.30A.060(L), landfills are a special use permitted in the Agricultural district upon approval by the Maui Planning Commission. Therefore, a County Special Use Permit application to allow the landfill operations over this portion of land will be made to the Maui Planning Commission. In addition, the project site is located within the County of Maui's Special Management Area (SMA). As such, the boundary realignment of the landfill activities in the encroachment area of Parcel 7 and grading activities for the detention basin will require processing of a SMA Use Permit. Coordination with the State Land Use Commission office indicated that a Special Use Permit for the existing and the expansion area will be required. Since the existing landfill area (29.0 acres) and encroachment area (5.4 acres) are greater than 15.0 acres, a State Land Use Special Use Permit from the Land Use Commission will be required.

E. PERMIT VIOLATIONS

On May 18, 2006, the Department of Health, Clean Water Branch (CWB) conducted a Compliance Evaluation Inspection (CEI) in relation to the landfill's National Pollutant Discharge Elimination System Permit, General Permit Coverage. Based on the CEI, a Notice of and Finding of Violation was issued to the DPWEM. The areas of violation are summarized as follows.

- a. In the area of the stockpile of scrap vehicles, a strong odor of petroleum was detected and significant amounts of oil staining on the ground was observed.
- b. No overhead cover or other BMPs were observed for the scrap vehicle stockpiles.
- c. Lead acid batteries were placed in direct contact with the ground, on wooden pallets, or in an aged shipping container. Small amounts of acid were observed spilling from the battery cases onto the ground.
- d. An excavator, located near the scrap vehicle stockpile, was leaking oil.
- e. The spill pallets of the oil stored in the 55-gallon drums, on the east side of the landfill, were full of oil. The shelter did not adequately protect the 55-gallon drums from rain events and the spill pallets would fill up with rain water.
- f. No asphalt stockpile BMPs were observed for the small amounts of asphalt stockpiles.
- g. The DPWEM, Solid Waste Division has not submitted a Discharge Monitoring Report since 1999. No sampling kit was available onsite and landfill staff had not received any storm water sampling or pollution prevention training.

The DPWEM response to the notice of violation is summarized as follows.

- 1) The DPWEM has requested \$1.5 million in next year's budget for scrap metal removal and clean-up. The previous contractor was unable to make progress with the stockpile except for removal of batteries and propane tanks for recycling.
- 2) The Solid Waste Division is currently implementing a plan for the collection of scrap metal and related materials as follows:
 - a. A cinder pad has been placed on the mauka side of the landfill parcel for three (3) 37 cubic yard roll-offs and two (2) 20-foot shipping

containers with sufficient turn-around room for haul trucks and easy access by customers.

- b. One 20-foot shipping container has been placed on the pad to hold two (2) spill pallets, each with four (4) 55-gallon drums for used motor oil collection.
 - c. Haztech has been hired to pump the drums, as well as pump and clean the spill pallets prior to transferring them to the new shipping container.
 - d. One 20-foot shipping container has been placed on the pad for batteries.
 - e. Two (2) 37 cubic yard roll-offs have been procured and will be hauled to Hana for the collection of miscellaneous scrap metal with propane tanks and one for the collection of appliances, both freon and nonfreon.
 - f. Eighteen (18) toters, either 64-gallon or 96-gallon, for glass collection will be transported by Maui Recycling Service to Maui Disposal's glass pulverizer. A 20-foot shipping container will be ordered so that the toters are covered.
 - g. Banning derelict vehicles from the landfill so that these materials are no longer stockpiled, eliminating the problem of hauling them out on Hana Highway with its narrow lanes, numerous bridges with limited loads, heavy traffic, winding route with blind curves, steep grade changes with some sheer drop-offs.
- 3) The DPWEM will be monitoring storm water discharge, as required. Proceeding with the SMA permit application and other land use permits for the buffer area around the landfill parcel will allow the construction of storm water improvements including a retention basin for storm water runoff from the MSW area.

F. CHAPTER 343, HAWAII REVISED STATUTES (HRS) REGULATORY CONTEXT

The project involves the use of land owned by the State of Hawai'i and County of Maui funding and use within the Conservation district, requiring the processing of an environmental assessment (EA) pursuant to Chapter 343, HRS.

In 2004 an EA was prepared in support of the Special Use Permit to cover the 5.4-acre encroachment of the Hana Landfill into the adjacent portion of Parcel 7 and the Special Management Area Use Minor Permit for the development of the runoff detention basin. The notice of the availability of the Draft EA was published by the Office of Environmental Quality Control in The Environmental Notice on November 23, 2004. During the review period, comments by the Maui Planning Department indicated that the original Landfill did not have a Special Use Permit, nor a Special Management Area Use Permit to cover current landfill operations. In addition, coordination with the State Land Use Commission indicated that the existing landfill operations and expansion area would require a State Land Use Commission Special Use Permit. Accordingly, this Revised EA has been prepared to address the existing and proposed expansion of the Hana Landfill's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the overall action. The County of Maui, Department of Public Works and Environmental Management will be the approving agency for the Revised EA.

**II. AFFECTED
ENVIRONMENT,
POTENTIAL IMPACTS
AND MITIGATION
MEASURES**

II. AFFECTED ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

a. Existing Conditions

The project site is located north of Hana Bay, accessed by Waikalua Road via Hana Highway. The State of Hawai'i owns the adjacent property to the north and west of the project site, identified by TMK 1-3-6:7. The State parcel is approximately 407 acres in size. There is one (1) lease over the area to Lloyd Abreu for cattle grazing. The parcel to the south of the subject property is currently vacant, owned by Keola Hana Maui, Inc. East of the project site is Kainalimu Cove and the Pacific Ocean.

The remaining portion of Parcel 12, between the landfill and shoreline, is a conservation buffer and includes the Pi'ilani Trail.

b. Potential Impacts and Mitigation Measures

The Hana Landfill has been utilized by the County for solid waste disposal since 1969. The proposed project involves the realignment of existing boundaries to accommodate an encroachment area of existing landfill operations, incorporate the existing monitoring wells, as well as grading of a detention basin to capture runoff from the landfill, and to provide a buffer zone. The proposed project is not anticipated to result in adverse impacts to surrounding land uses in the project vicinity. The leaseholder of the 45.14-acre expansion area does not object to the boundary expansion. The purpose of the proposed action is to bring the landfill into conformity with applicable land use permits. The proposed drainage detention basin is designed to mitigate adverse impacts of stormwater runoff from the MSW area to adjacent properties.

2. Climate

a. Existing Conditions

Like most areas of Hawai'i, Hana's climate is relatively uniform year-round. Hana's tropical latitude, its position relative to storm tracts and the Pacific anticyclone, and the surrounding ocean combine to produce this stable climate. Variations in climate among different regions, then, is largely left to local terrain.

Average temperatures in Hana range between 63 degrees and 84 degrees Fahrenheit. August is historically the warmest month, while January and February are the coolest.

Rainfall in Hana is highly seasonal, with most precipitation occurring between October and April when winter storms hit the area. Situated on the leeward side of the Haleakala, this region receives most of its rainfall in late afternoon and early evening, after seabreezes take moisture upslope during the day. Precipitation data collected in the region indicate the project site receives approximately 70 to 75 inches of rain a year.

Wind patterns in the Hana area are also seasonal. The northeasterly tradewind occurs 90 percent of the time during the summer, and just 50 percent of the time in the winter. Wind patterns also vary on a daily basis, with tradewinds generally being stronger in the afternoon. During the day, winds blow onshore toward the warmer land mass. In the evening, the reverse occurs, as breezes blow toward the relatively warm ocean.

b. Potential Impacts and Mitigation Measures

The existing landfill operations and proposed expansion are not anticipated to adversely impact climatic conditions.

3. Topography and Soils

a. Existing Conditions

The U.S. Department of Agriculture Soil Conservation Service designates various associations on the island of Maui and classifies the soil in its *Soil*

Survey of Islands of Kaua'i, O'ahu, Maui, Molokai, and Lana'i. The project site is located within the Hana-Makaalae-Kailua association. See Figure 5. This area contains moderately deep and deep, gently sloping to steep, well-drained soils. The texture ranges from moderately fine to fine subsoils. Lava flows, a'a (rLW) underly the project site, consisting of geologically recent lava flows. See Figure 6. The flows are a mass of clinkery, hard, glassy, sharp pieces of lava, making the land difficult to traverse. This miscellaneous land type is often used for water supply, wildlife habitat, and recreation (U.S. Department of Agriculture Soil Conservation Service).

Topography underlying the landfill slopes gently in an west to east direction, and is not subject to landslides or other types of mass movement. Elevations in the project area range from 50 feet to 30 feet above mean sea level (amsl). The material underlying the landfill is inorganic in nature, and, therefore, not prone to settlement.

b. Potential Impacts and Mitigation Measures

The proposed project will not result in significant ground altering activities. Grading and excavation activities associated with the detention basin will be completed in accordance with Chapter 20.08, Soil Erosion and Sedimentation Control of the Maui County Codes and the permit requirements of the State of Hawai'i, Department of Health and the National Pollutant Discharge Elimination System (NPDES). Minor changes to existing topographical conditions will result from landfill activities within the active waste receiving area (MSW). This area is limited to an approximate 50-foot by 100-foot land area. In general, adverse impacts to topography and soil conditions in the vicinity of the project site are not anticipated as a result of project implementation.

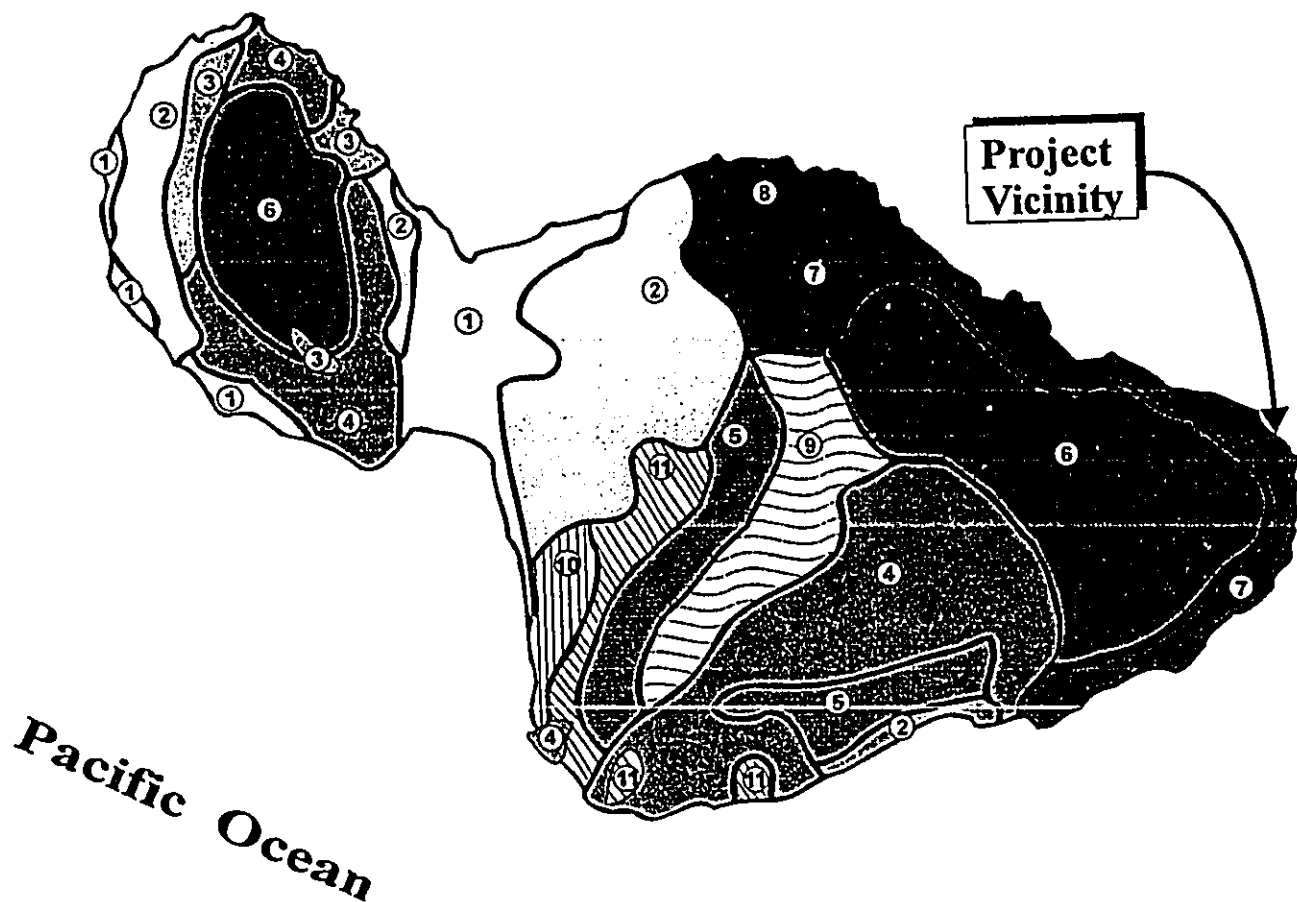
4. Flood and Coastal Hazards

a. Existing Conditions

The Flood Insurance Rate Map (FIRM) for this region indicates that a southeast portion of the project site is located in Zone A4, areas of 100-year flooding. See Figure 7. However, the landfill operations are in upland areas, located at elevations in excess of 40 feet above mean sea level. In addition,

LEGEND

- | | |
|--|-------------------------------------|
| ① Pulehu-Ewa-Jaucas association | ⑦ Hana-Makaalae-Kailua association |
| ② Waiakoa-Keahua-Molokai association | ⑧ Pauwela-Haiku association |
| ③ Honolua-Olelo association | ⑨ Laumaia-Kaipoi-Olinda association |
| ④ Rock land-Rough mountainous land association | ⑩ Keawakapu-Makena association |
| ⑤ Puu Pa-Kula-Pane association | ⑪ Kamaole-Oanapuka association |
| ⑥ Hydrandeps-Tropaquods association | |



Map Source: U.S. Department of Agriculture, Soil Conservation Service

Figure 5 County of Maui's Hana Landfill
Land Acquisition
Soil Association Map

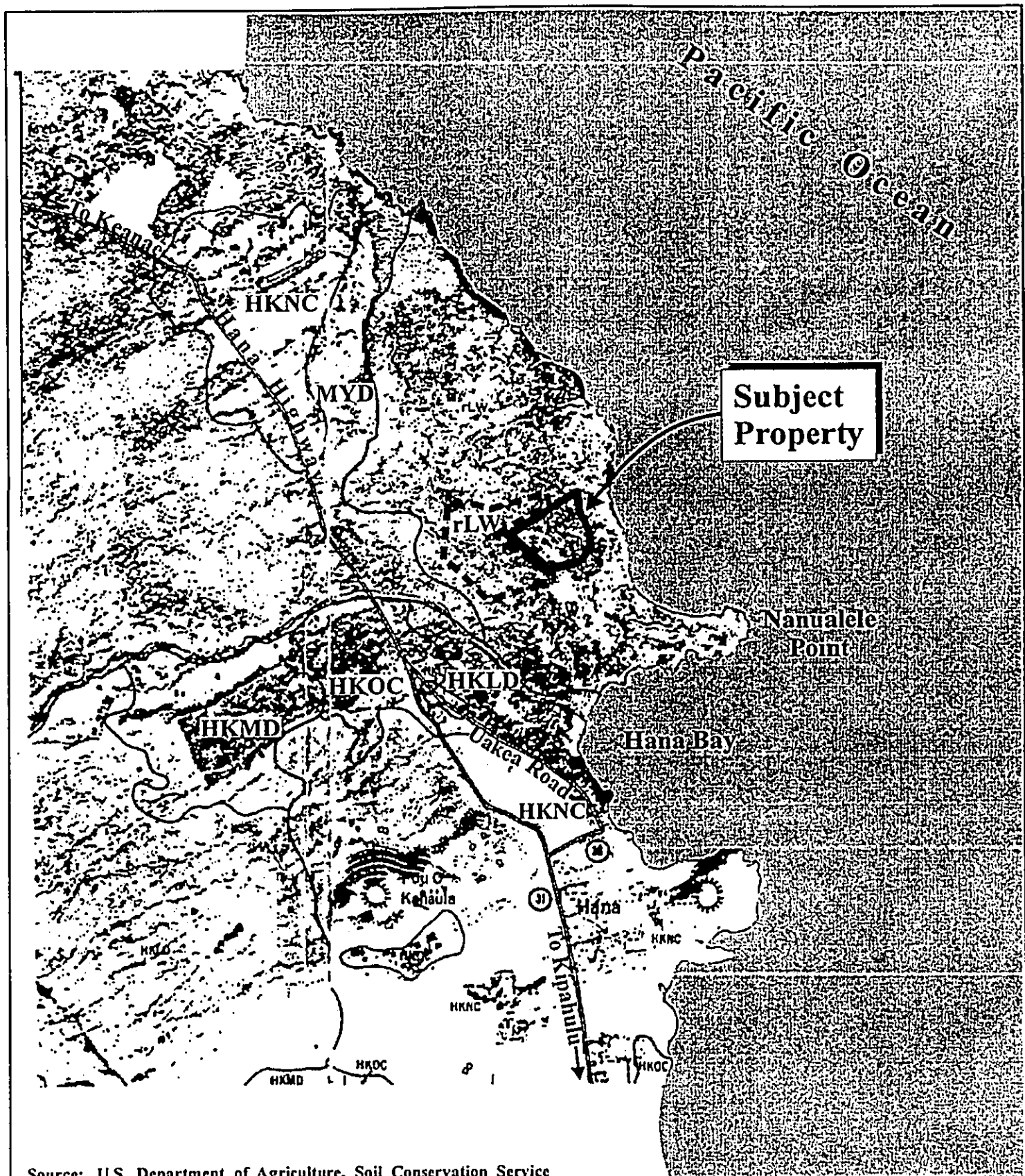
NOT TO SCALE



Prepared for: County of Maui, Department of Public Works
and Environmental Management

MUNEKIYO HIRAGA, INC.

COMDPW/HanaLFSOILS



Source: U.S. Department of Agriculture, Soil Conservation Service

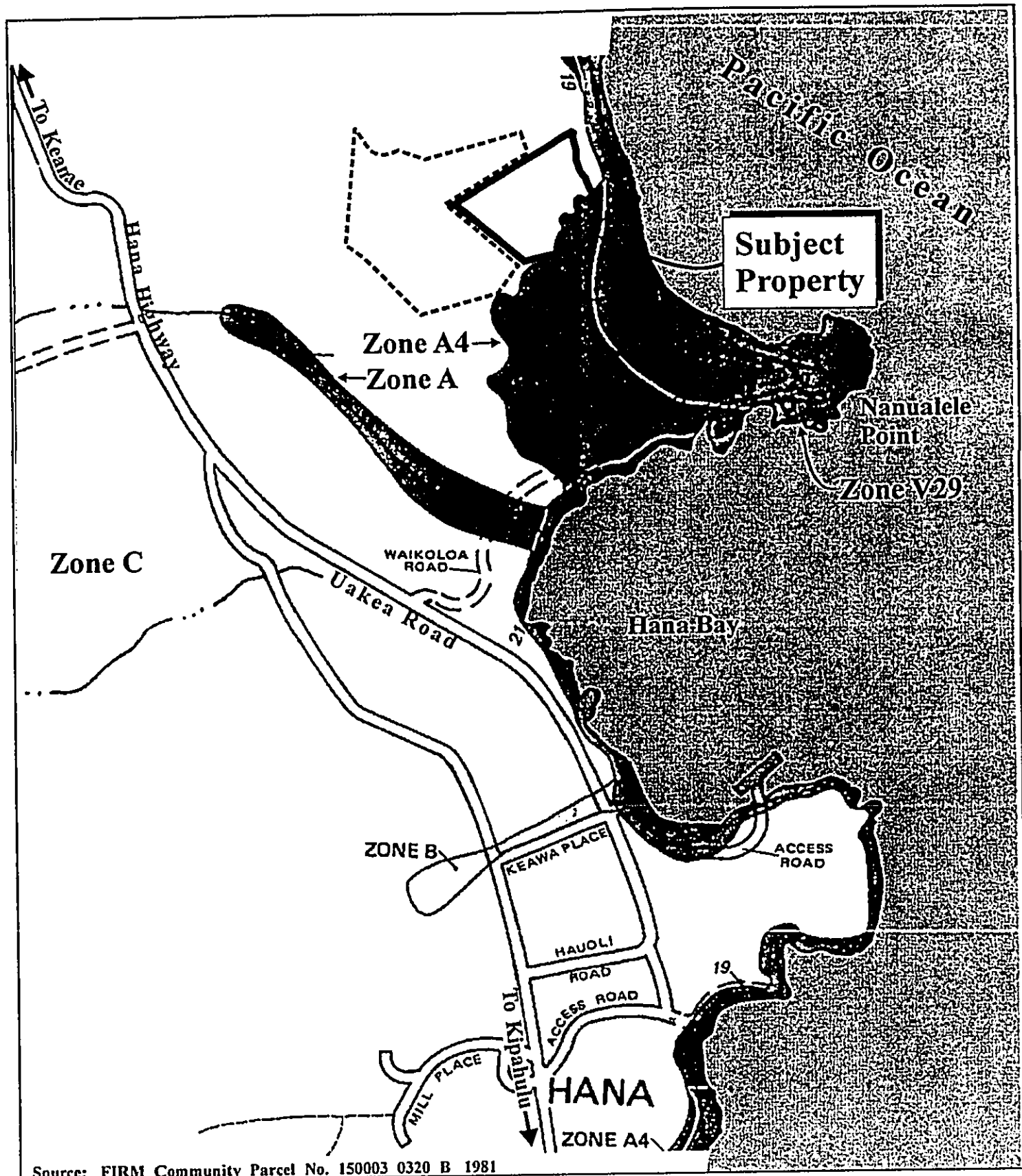
Figure 6 County of Maui's Hana Landfill Land Acquisition Soil Classification Map



Prepared for: County of Maui, Department of Public Works
and Environmental Management

MUNEKIYO & HIRAGA, INC.

CONDPWHanaLFsoilclass



Source: FIRM Community Parcel No. 150003 0320 B 1981

Figure 7 County of Maui's Hana Landfill
Land Acquisition
Flood Insurance Rate Map



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and Environmental Management

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the landfill facility is located beyond the reaches of the tsunami inundation zone.

b. Potential Impacts and Mitigation Measures

A small eastern portion of the project area is located within Zone A4, areas of 100-year flooding, but beyond the reaches of the tsunami inundation zone. To ensure that potential adverse impacts associated with flooding are avoided, the DPWEM will continue to maintain natural contours which divert storm water flows away from active portions of the landfill. Runoff from the active portion of the landfill will be collected and retained by the proposed detention basin for better storm water management.

5. Streams and Groundwater

a. Existing Conditions

There are no streams or wetlands located in the immediate vicinity of the subject property. However, according to topographical maps prepared by the United States Geographical Survey, the Kawaipapa Stream is located approximately 1,500 feet to the south and west of the project site.

The Hawai'i Stream Assessment, a Preliminary Appraisal of Hawai'i's Stream Resources (HSA) was compiled by the State Department of Land and Natural Resources, Commission on Water Resource Management and represents a first step in the identification of streams and rivers with significant natural and cultural qualities which may be appropriate for protection. The HSA designates the Kawaipapa Stream as "interrupted", flowing year-round in upper portions, and intermittently at lower elevations. It also notes that the Kawaipapa Stream has moderate recreational resources related to swimming opportunities, and substantial cultural resources related to historic sites and taro cultivation. The basal groundwater underneath the landfill occurs in the Honomaunu formations. The aquifer beneath the landfill is part of the Kawaipapa System of the Hana sector (URS Corporation, September 2006).

b. Potential Impacts and Mitigation Measures

There are no streams or wetlands located in the immediate vicinity of the project site. Nevertheless, BMPs will be utilized during grading activities in order to prevent the contamination of downstream environment of Kawaipapa Stream. In addition, groundwater monitoring and testing is undertaken by the DPWEM semi-annually to ensure that landfill operations do not result in adverse impacts to downstream environments. Groundwater from the three (3) monitoring wells were sampled in January 2007 by URS Corporation and analyzed for the Detection Monitoring Program monitoring parameters. All monitoring parameter concentrations were within the statistical control limits established for each well during the January 2007 sampling event. Refer to **Appendix "D"**. No visual signs were observed indicative of a release from the landfill to the groundwater. With these findings, URS is recommending that semi-annual groundwater monitoring be continued in accordance with the current Detection Monitoring Program.

6. Flora, Fauna and Avifauna

a. Existing Conditions

The project area vegetated with lowland, windward, non-native forest except for cleared portions around the existing landfill. During a Flora and Fauna survey conducted by Robert Hobdy in November 2006, the terrain of the property was placed into three categories: (1) forest; (2) landscape; and (3) landfill. See **Appendix "F"**.

In the forest area, the undeveloped portions of this property were disturbed, wet and a lowland forest dominated by non-native plant species, such as common ironwood, gunpowder tree, African tulip-tree and star flower. There were a few native species scattered in the forest, such as hala, naupaka kahakai, kauna`oa pehu and kakalaioa.

The Hana Landfill has received awards for its attractive landscape. Ornamental plants have been placed around the entrance, the load talley office, and along the road.

The Hana Landfill is a cleared and grubbed area that is largely barren ground

and covered trash areas. Refer to Figure 4. The covered areas and the perimeters have an abundance of common weeds that have taken over the recently disturbed ground. The only native plant found here was the common 'uhaloa.

A total of 141 plant species were recorded during the survey. Of these, none were endemic only to Hawai'i, while 10 species were indigenous to Hawai'i and other Pacific Islands. These species were 'okupukupu, no common name for cyperus polystachyos, kakalaioa, kauna'oa pehu, moa, hala, kou, koali awahia, naupaka kahakai and 'uhaloa.

b. Potential Impacts and Mitigation Measures

The flora and fauna survey reported the vegetation throughout the project area is comprised mainly of non-native species with a few common native species scattered about. No Federally listed threatened or endangered species (USFWS, 1999) were found on the property, nor were any found that are candidates for such status. No special habitats were found. There is little botanical concern with regard to the property and the proposed landfill expansion is expected not to have a significant negative impact on the botanical resources in this part of Maui.

Although no miconia plants were found on or adjacent to the project area, the cinder used in the landfill comes from a cinder cone in the mauka forests where miconia has previously been found. (Miconia is a highly invasive species that has been the focus of ongoing intensive eradication since 1993.) A practical recommendation is noted to periodically monitor both the landfill property, as well as the cinder pit site for the presence of miconia plants and to eradicate any individuals found while they are still immature. Refer to Appendix "F".

7. Archaeological Resources

a. Existing Conditions

An archaeological assessment of the existing and future active expanded portions of the Hana Landfill site and adjacent State lands was carried out in September 2003. See Appendix "G". The field assessment found no

significant material culture remains during the inspection of the project area. In addition, no significant above ground structural remains were noted in the adjacent area. Given the very rocky surface of the surrounding a`a terrain, it does not appear likely that the immediate study area was substantially utilized by precontact Hawaiians or during the post-contact sugar and ranch eras. The level of previous disturbance from the grading and filling operations has likely eliminated any evidence of former land use on the project area.

b. Potential Impacts and Mitigation Measures

No significant cultural remains were noticed in the archaeological assessment carried out on the landfill site and proposed active expansion area. Based on the archaeological assessment, no further work or mitigation is recommended. The proposed action is not anticipated to adversely impact archaeological resources. The State Historic Preservation Division (SHPD) has determined there will be "no historical properties affected" by the proposed undertaking. See Appendix "G-1".

The remaining areas of Parcel 12 will be used as a buffer zone and will not be altered. Therefore, adverse impacts to archaeological or historic properties located in the buffer zone are not anticipated.

8. Cultural Impact Assessment

a. Cultural Impact Assessment

(1) Historical Context

Pre-Contact

The subject property is located within the Kawaipapa ahupua`a, part of the larger moku or district of Hana, which extends from Ko`olau to Kaupo. The Hana moku was noted for bountiful production of upland taro, bananas, yams, wakue, olana and `awa (Handy, 1940). The Hana district is also distinguished by its rich cultural history. Hana's closeness to the island of Hawai`i permitted frequent interaction between the two islands in times of war and peace. In pre-contact times, Hana was a desirable district to reside in due to its abundant agricultural resources and numerous coastal fishponds. The Hana district was also noted for its fine

surfing, excellent supply of natural woods (used for crafting scaffolds and ladders) and having the best round, smooth stones used in slingshots.

Hana was also called "a land beloved by chiefs because of the fortress of Ka'uiki and the ease of living in that place". Ka'uiki, a *pu'u* located on the southern edge of Hana Bay, had a summit at a height of approximately 400 feet and was covered with a natural vegetative mat that provided the chiefs and chiefesses with a comfortable sleeping environment. Fishponds immediately below Ka'uiki provided unlimited fish supplies, while large quantities of awa root delighted the chiefs. Pi'ilani, who built the great road around Maui, was said to have dwelt at Ka'uiki.

Notable figures of old Hawai'i were known to have resided at Ka'uiki, including Kaahumanu, who was born and raised in the Kawaipapa ahupua'a. According to Handy, Pi'ilani and Kihapi'ilani resided at Ka'uiki. Pi'ilani was the older brother of Kihapi'ilani, who built the great road around Maui. Kihapi'ilani stayed at Ka'uiki with Pi'ilani until he apparently grew tired of his brother's continued insults. With the aid of a fleet of canoes sent by Umi from the island of Hawai'i, Kihapi'ilani defeated Pi'ilani and later extended his rule throughout the island of Maui.

As chief of Maui, Kihapi'ilani built the "Long Road", or Alaloa around the island of Maui, around 1516 (Handy, 1940). The trail was paved with flat hard beach stones, bordered in the open country by large boulders sunk into the ground. Maui ali'i organized human chains to pass shoreline stones from the coast to the trail areas. The trail was useful during times of war, with runners carrying messages along the trails for the ali'i. The trail was also used during the Makahiki by tax collectors, the priests who released land from the kapu after the ho'okupu or taxes had been received and the bearers of the symbol of Lono. (Handy, Handy and Pukui, 1972). Eventually, the Maui trail would come to be known as the King's Trail, the only island trail in Hawai'i to traverse the whole island.

(2) Local Resident Interviews

Samuel Kalalau III

Mr. Kalalau was born in Hana in 1952, and currently works as a supervisor for the County of Maui's Highways Division in Hana. Mr. Kalalau's family was from the Waikalua area, which is located along the northern extent of Hana Bay. Although most of the Waikalua area has been significantly altered, the area is noted for having a rich cultural history.

Mr. Kalalau indicated that he is aware of one (1) traditional trail running in a mauka-makai direction along Kawaipapa Stream. Mr. Kalalau noted that his great grandfather, a resident of Waikalua, along with others from the area, used to farm taro, sweet potatoes and bananas in the vicinity of Helani, located near the upper portions of Kawaipapa Stream, approximately 2,000 feet mauka of the Hana Highway. In recalling the trail and mauka farming area, Mr. Kalalau noted:

The residents used to walk up from Waikalua everyday...they couldn't farm down by the bay because of the ehu kai (saltwater spray). They'd walk up along a trail just north of the river. Along the way, they used to stop at the houses and talk story with the residents, swap fruit. But when the sugar cane came in, they had to find new places to farm.

With regard to the subject property, Mr. Kalalau noted that some Hana residents are known to harvest ualua and noni plants within the limits of the Hana landfill property. The harvesting is not believed to be associated with any religious practices and does not take place near the proposed sedimentation basin. Many of the plants growing near the landfill have been propagated and are now flourishing at the Hana Community Health Center.

Mr. Kalalau does not believe the proposed grading activities and realignment of the landfill boundary lines will adversely impact ualua and noni plants growing in the vicinity of the project area. In addition, the proposed project should not have an impact on the original mauka-makai trail route used by former residents of the Waikalua area.

Andrew Park

Andrew Park was born in Hana in 1942. He recently retired from his position as the supervising operator at the Hana Landfill. Mr. Park worked at the landfill facility for over 17 years. In 1995, the County of Maui named Mr. Park County Employee of the Year in recognition of his efforts to improve the landscaping and visual aesthetics of the Hana Landfill.

In recalling the history of the project site, Mr. Park recalled that prior to opening of the landfill, workers from the sugar plantation used to extract the a'a lava for use in building roads in the sugar cane fields and the plantation camps. The a'a lava had excellent compaction, proving optimal as a grade material for the local roads.

During his years of work at the project site, Mr. Park has witnessed a significant amount of people using the King's Trail, makai of the project site. Local residents commonly utilize the landfill driveway to access the shoreline trail and coastal area, mostly for fishing purposes. However, the large majority of the pedestrians along the King's Trail seem to be visitors hiking the King's Trail, most of whom start and end at the Wainapapa State Park facility. In rare instances, some tourists have also used the landfill driveway as an access point for hiking the King's Trail.

Mr. Park also noted that on occasion, a number of local residents have utilized ironwood trees in the vicinity of the project site as materials for use in the construction of traditional hale.

Mr. Park does not believe the boundary realignment and grading of the detention basin will result in adverse impacts to existing natural resources in the vicinity of the project area. Further, the proposed project will not restrict shoreline access to the King's Trail, nor will the project impact use of available ironwood trees for use in construction of native structures.

b. Cultural Impact Analysis

The Hana district is noted as being significant from a historical and cultural perspective. However, lands in the vicinity of the project site have been

significantly altered through landfill use and previous extraction of a lava for use in the construction of local roadways. In addition, archaeological field work, historical research and local resident interviews indicate there are no historic properties or significant cultural or religious activities which will be adversely impacted by the proposed action.

9. Air and Noise Quality

a. Existing Conditions

The project site is located in a rural area, absent of large developments and intensive air source contaminants. The Hana region is consistently exposed to trade winds, which contributes to excellent air quality in the region. Ambient noise levels are also influenced by the region's rural atmosphere.

In the vicinity of the project site, air quality is impacted by dust generated from the ongoing deposits of solid waste, as well as odors generated by decomposing refuse material. Refuse deposits are covered daily with earthen material in an effort to mitigate the effect of decomposing odors. Ambient noise in the area is largely attributed to the daily operations associated with landfill activities, which includes use of trucks and bulldozers for spreading and covering waste material. There are three (3) methane gas monitoring probes located in the expansion area on Parcel 7.

b. Potential Impacts and Mitigation Measures

Short-term construction-related impacts associated with the grading of the detention basin include dust and other air pollutant emissions. Appropriate BMPs will be utilized during grading activities in order to mitigate the potential for adverse impacts to air quality and ambient noise levels. Given the location and current operating standards of the landfill, the temporary effects associated with the construction activities of the detention basin are not anticipated to be significant or adverse. Similarly, in the long-run, dust generated by soil cover over the municipal solid waste and noise generated by machinery are not anticipated to adversely impact surrounding properties, since the landfill site is located approximately 0.25 mile from the nearest residence. Regular monitoring of the methane gas probes by DPWEM, Solid Waste Division staff does not indicate the presence of methane gas from the

landfill operations.

10. Use of Chemicals and Fertilizers

a. Existing Conditions

Currently, no herbicides or pesticides are used at the landfill site.

b. Potential Impacts and Mitigation Measures

Since herbicides and pesticides are not used at the landfill site, adverse effects to surface, underground and marine resources from these applications are not anticipated.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population and Economy

a. Existing Conditions

The Hana region includes Hana Town and the neighboring coastal communities of Keanae, Kipahulu and Kaupo. Situated 55 miles east of the County seat in Wailuku, Hana Town serves as the major population center of the Hana area. The economy in Hana is primarily based on diversified agriculture, the visitor industry, government services and subsistence activities. Diversified agricultural activities include ranching, as well as the cultivation of taro and tropical fruits, flowers and foliage. Businesses, government services and visitor accommodations are centered in Hana Town.

In 2000, the population of Hana was 1,867, while the population for the year 2005 was 1,998. By the year 2010, the baseline population of Hana is projected to increase to 2,118 (Maui County Planning Department, June 2006).

In 1990, there were approximately 680 jobs in the Hana region, while in the year 2000, there were approximately 840. By the year 2010, the baseline number of jobs in Hana is anticipated to be approximately 882 (SMS, June 2002).

b. Potential Impacts and Mitigation Measures

The proposed project involves the current landfill operations and realignment of existing landfill boundaries to incorporate additional lands for use as a buffer zone and encroachment area of existing landfill activities. The project will also include grading activities associated with the construction of a runoff detention basin. Implementation of the project will not require commitment of significant financial resources. No short- or long-term adverse impacts to the region's economy and population are anticipated as a result of the proposed project.

2. Traditional Beach and Mountain Access

a. Existing Conditions

The Pi'ilani Trail is located to the east of the Hana Landfill site along the Hana coastline. As noted in the Cultural Impact Assessment, the landfill parking lot is used to access the Pi'ilani Trail and to access fishing sites along the coast. The proposed improvements will not impact the Pi'ilani Trail and the public will still be able to use the parking lot to access the fishing spots and the Pi'ilani Trail. The proposed scope of the current environmental assessment is to assess existing landfill operations both within the current landfill property and the encroachment of the adjacent State lands and proposed drainage improvements. The current operations have not and the proposed improvements will not impede access to the shoreline and Pi'ilani Trail.

b. Potential Impacts and Mitigation Measures

Access to traditional beach and mountain trails are not anticipated to be adversely impacted by the continuation of the landfill activities or boundary realignment.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

Headquartered in Wailuku, police protection service for the island of Maui is provided by the Maui Police Department, which includes Wailuku, Lahaina and Hana patrol districts. The Hana patrol division covers the area from Kailua to Kaupo, and is based out of the Hana substation, located near the intersection of Hana Highway and Uakea Road, southeast of the project site.

Fire prevention, suppression and protection services are provided for the County of Maui by the Department of Fire Control. The department maintains a fire station in Hana which is located on the same property as the Police substation.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to adversely impact the existing level of police and fire protection services in the Hana area. The proposed project will not extend the service area for police and fire protection.

2. Medical Facilities

a. Existing Conditions

Maui Memorial Medical Center is the only major medical facility on the island. Acute, general and emergency care services are provided by the approximately 231-bed facility. In Hana, the Hana Health Clinic is located 0.5 mile west of the project site, providing general health care, dental services and 24-hour acute care services.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to adversely impact the existing level of medical services currently provided by the Hana Health Clinic or Maui Memorial Medical Center.

3. Schools

a. Existing Conditions

The State of Hawai'i, Department of Education operates two (2) public schools in the Hana region, Hana High and Elementary School and Keanae School. Hana High and Elementary School, located approximately one (1) mile to the north of the project site, has a total enrollment of 350 students for the 2005-2006 school year (State Department of Education, February 2007).

b. Potential Impacts and Mitigation Measures

The proposed project is not a population generator and is not anticipated to adversely impact the existing schools in the East Maui region.

4. Solid Waste

a. Existing Conditions

Solid waste in the vicinity of the project is collected by the County of Maui, Department of Public Works and Environmental Management (DPWEM) or by private collection services, and transported to the Hana Landfill.

Single-family solid waste collection service is provided by the County of Maui on a once-a-week basis. The project site also accepts commercial waste generated by the region's limited commercial activity, including The Hana Hotel and The Hana Ranch. The municipal solid waste area receives approximately four (4) tons of waste per day. The landfill also has receiving areas for scrap metal, biodegradable materials and recycling. Refer to Figure 4.

b. Potential Impacts and Mitigation Measures

The proposed project is designed to improve the DPWEM's Hana Landfill facility. The landfill has an estimated capacity of 290,400 cubic yards and will be able to accommodate waste disposal to the year 2050 (R.M. Towill Corporation, July 2002). No adverse impacts to the County's solid waste disposal capacity are anticipated as a result of project implementation. In addition, no solid waste will be generated during the proposed grading

activities. Excavated material for the detention basin will be used for daily cover of the landfill. The proposed action will not increase the MSW capacity of the landfill.

5. Recreational Resources

a. Existing Conditions

Major recreational resources in the Hana region include the County-maintained Hana Ball Park, Hana Bay Beach Park in Hana Town and Koki Beach Park near Hamoa. In addition, the State of Hawai'i maintains the Wainapanapa State Park approximately 1.5 miles north of the subject property. The National Park Service maintains the Oheo Gulch Recreational area, part of the larger Haleakala National Park.

Portions of the Pi'ilani Trail, also known as the King's Highway, traverse the shoreline area fronting the project site to the east. The Pi'ilani Trail is not within the existing boundaries of the landfill nor is located in the proposed expansion area. The Pi'ilani Trail is not affected by the daily operations of the landfill. Refer to Figure 3.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to adversely impact the existing level of recreational resources available to the residents of East Maui. Further, the Pi'ilani Trail, east of the project site, will not be impacted as a result of project implementation.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

Hana Highway is a two-way, two-lane State Highway, serving as the main transportation arterial with rural collector road status for the Hana region. The Hana Highway is noted for its scenic beauty and historic nature, which includes 59 bridges and 8 culverts, all of which are over 50 years old.

Access to the Hana Landfill is provided via Waikalua Road, a paved roadway over compacted subgrade.

b. Potential Impacts and Mitigation Measures

Onsite equipment will be utilized for grading activities associated with the construction of the detention basin. No adverse impacts to existing roadways in the vicinity of the project site are anticipated as a result of project implementation.

2. Water

a. Existing Conditions

The Hana region is serviced in part by the County of Maui, Department of Water Supply, which includes two deep wells, one located at Hamoa and one at Waiku. These wells service a series of pipelines which in turn service the area of Hana Town. There is no County water servicing the subject property. A 2-inch waterline runs along the southern portion of Waikalua Road, along the northern rim of Hana Bay. The 2-inch line terminates at a point approximately 750 feet south of the subject property.

b. Potential Impacts and Mitigation Measures

The proposed action does not involve modifications or improvements to the water infrastructure system. Project implementation is not anticipated to adversely impact the County of Maui's water service capacity in the vicinity of the project site.

3. Wastewater

a. Existing Conditions

There are no County wastewater collection or treatment facilities currently servicing the Hana region. Individual properties are generally serviced by individual wastewater systems (IWS), including septic tanks, cesspools and packaged treatment plants. An individual toilet is located onsite for use by landfill staff, serviced by a cesspool. Water for the toilet use is trucked to the site and stored in a 250-gallon tank.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to adversely impact individual wastewater services in the East Maui region. No improvements or expansion to wastewater capacity is anticipated.

4. Drainage System

a. Existing Conditions

Storm water drainage in the vicinity of the project site generally follows natural contours, sheet flowing into streams and gullies and discharging into coastal waters. Within the limits of the project area, extensive grass and landscaping covers the lands surrounding the active area of the landfill. The vegetative cover and porous cinder soils generally provide the necessary capacity to absorb runoff in times of heavy rains.

The active area of the landfill operates above the surrounding grade. As such, offsite runoff from a 25-year, 24-hour storm to the active area is prevented by natural contours. Under current conditions, the active area of the landfill is graded with a soil cover in a series of terraces, sloped outward to control runoff resulting from direct rainfall. The terraces are sloped to direct runoff downslope onto the vegetative cover which surrounds the active landfill area. The runoff needs to be collected and contained so that discharges do not violate the provisions of the Clean Water Act. The proposed drainage improvements are designed to collect and contain runoff from the active landfill area, to provide appropriate storm water management.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to result in an increased level of onsite drainage. The project will include grading activities to construct a detention basin, designed to accommodate runoff from the active landfill area. The basin was sized to contain twice the volume of runoff generated by a 24-hour, 2.5-year storm from an area the size of one landfill cell (50 feet by 100 feet). The detention basin will be lined with a geo-membrane to prevent contamination of the underlying soils and groundwater. No adverse impacts to downstream environments or to natural drainage patterns surrounding the project site are anticipated as a result of project implementation.

5. **Electric and Telephone Systems**

a. **Existing Conditions**

Electrical and telephone services for the Hana region of Maui are provided by Maui Electric Company, Ltd. and Hawaiian Telecom, respectively.

b. **Potential Impacts and Mitigation Measures**

The proposed project is not anticipated to adversely impact the existing level of electrical and telephone services in the East Maui region.

6. **Cumulative and Secondary Impacts**

A cumulative impact is defined as an impact to the environment which results from the incremental impact of an action when added to other past, present, and reasonable foreseeable future actions regardless of what agency or person undertakes such other actions. Actions, particularly those that involve the construction of public facilities or infrastructure, may stimulate secondary impacts, such as increases in population and growth, or increases in the demand for public services. In this regard, it should be noted the proposed action involves actions which relate to current operations and regulatory compliance with the Clean Water Act and County and State permitting requirements. There will be no expansion to landfill capacity, therefore, cumulative and secondary impacts resulting from the proposed action are not anticipated.

**III. RELATIONSHIP TO
GOVERNMENTAL PLANS,
POLICIES AND
CONTROLS**

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICT

Chapter 205, Hawai'i Revised Statutes, relating to the Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural" and "Conservation". The existing Hana Landfill facility (Parcel 12) is located within the "Agricultural" district and "Conservation" district. See Figure 8. The green waste (biodegradable) storage area and Recycle Hana are located in the "Conservation" district. Based on the Department of Land and Natural Resources (DLNR) Conservation subzone map, the portion of Parcel 12 located within the "Conservation" district falls within the limited and general subzones. See Figure 9. Pursuant to Chapters 13-5-23(b) and 13-5-25(b), Hawai'i Revised Statutes, respectively, the County of Maui Department of Public Works and Environmental Management will seek a temporary variance from the permitted uses within the limited and general subzones to allow the continued use of existing landfill operations.

1. Reasons Justifying the Temporary Variance from Permitted Uses within the Limited and General Subzones

In October 1968, the County of Maui made a formal request to the DLNR to use a 29.054-acre site of State land identified by TMK 1-3-06:12(por.), along with a 20 ft. wide road easement thereto, for the Hana garbage dump. On March 14, 1969 the Board of Land and Natural Resources approved a right-of-entry to the property for the stated purpose. Refer to Appendix "B". The State Land Use Commission Boundary Interpretation No. 03-35 indicated that the Agriculture/Conservation district boundary in the area was established during the 1969 Five-Year Boundary Review. See Appendix "H". Subsequently, on November 16, 1984 the Governor of the State of Hawai'i approved Executive Order No. 3304 which transferred administration and control of the 29.054-acre site to the County of Maui for the Hana Landfill. Refer to Appendix "C". Therefore, subsequent to the establishment of the Agricultural/Conservation district boundary in the area of the landfill site, the State of Hawai'i acknowledged the County's occupation and use of the site for the Hana Landfill operations. As such, the County's prior use of the property for landfill

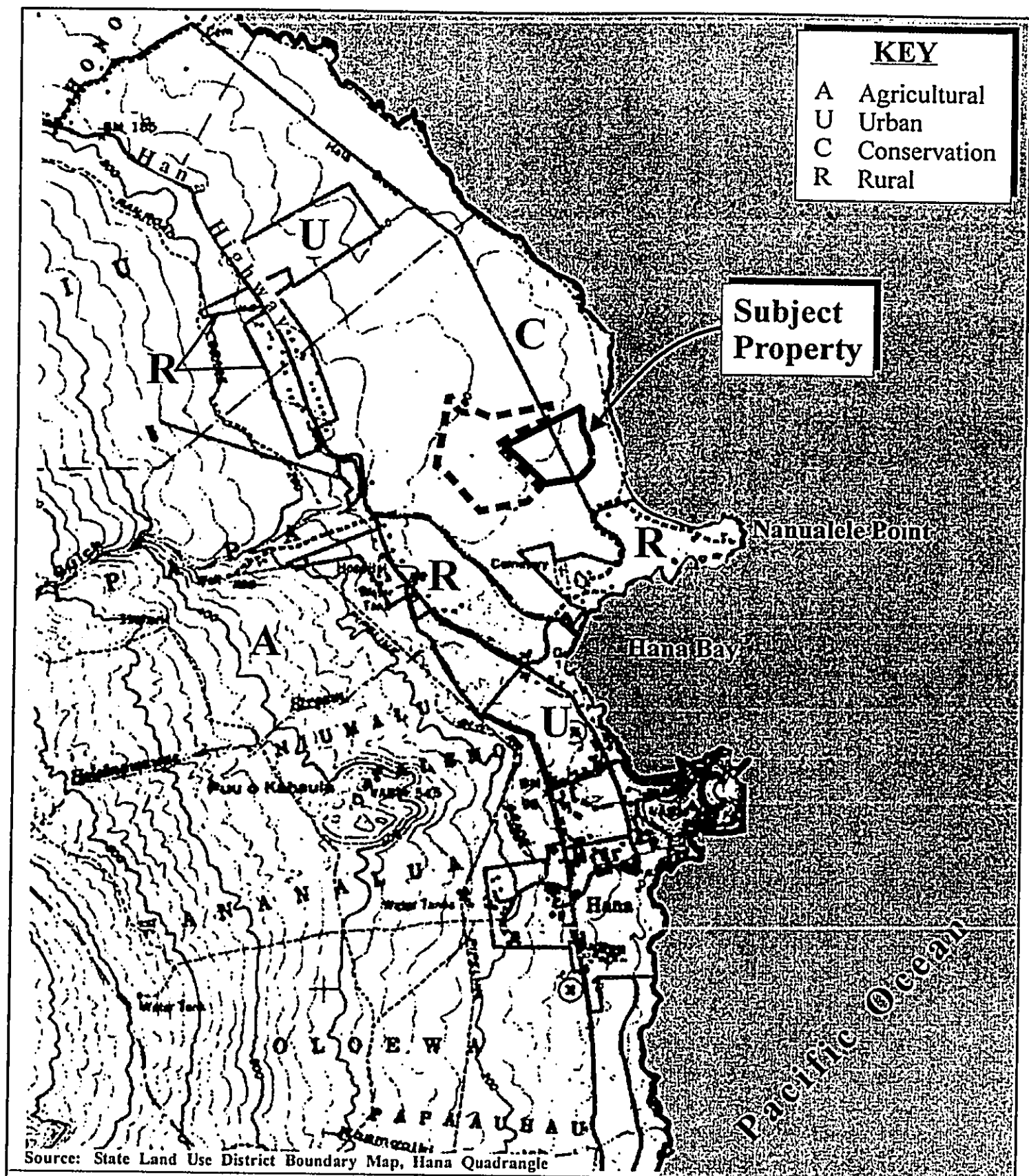


Figure 8 County of Maui's Hana Landfill
Land Acquisition
State Land Use District Boundaries



Prepared for: County of Maui, Department of Public Works
and Environmental Management

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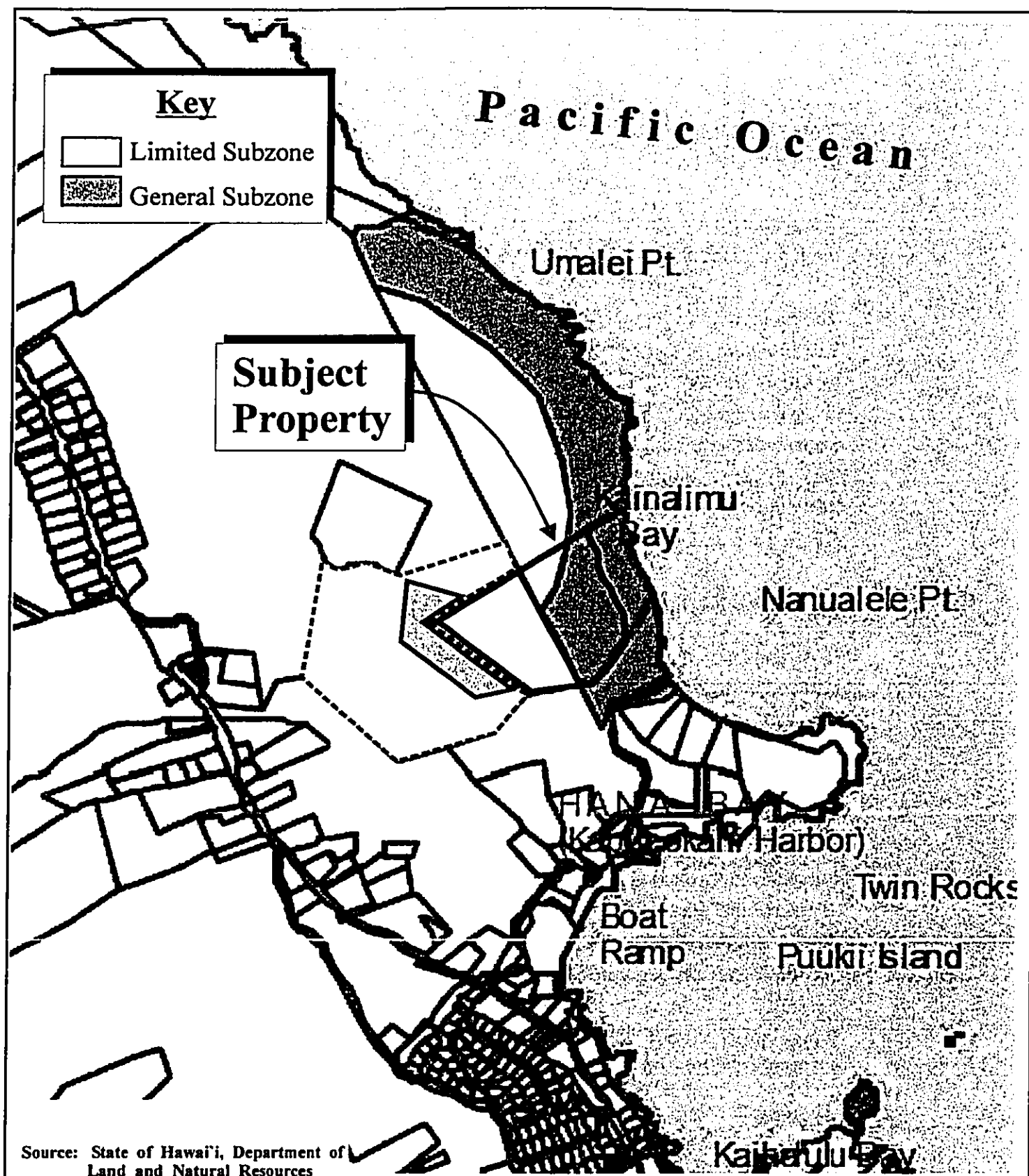


Figure 9



County of Maui's
Hana Landfill Land Acquisition
Conservation District Subzone Map

NOT TO SCALE

Prepared for: County of Maui, Department of Public Works
and Environmental Management

MUNEKIYO & HIRAGA, INC.

COMDPWHanaLFsubzone

purposes justifies the temporary variance from permitted uses within the limited and general subzones.

The portion of the existing landfill located within the "Agricultural" district includes the light commercial solid waste (MSW) area and a portion of the scrap metal area.

The proposed realignment of the landfill boundaries involves a subdivision of Parcel 7 to allow the consolidation of the 45.14-acre expansion area with Parcel 12. Refer to Appendix "A". The eastern boundary of the expansion area into Parcel 7 will be along the Agricultural/Conservation District Boundary. A boundary interpretation has been made by the Land Use Commission to facilitate the delineation of the expansion area in order to avoid intrusion into the Conservation district. Refer to Appendix "H". As such, a Conservation District Use Application (CDUA) will not be required for the proposed expansion of the landfill boundaries in Parcel 12.

2. State Land Use Commission Special Use Permit

In reference to the portions of the existing landfill and proposed expansion area situated in the State Land Use Agricultural district, it is noted that landfills are not an outright permitted use in the State and County Agricultural districts. Moreover, since the existing landfill does not have a SUP and the proposed expansion area together are greater than 15 acres, a Land Use Commission Special Use Permit (SUP) will be required for the existing and proposed operations.

Pursuant to Section 15-15-95, Hawai'i Land Use Commission Rules, certain "unusual and reasonable" uses may be permitted within the Agricultural district. Analysis of the proposed action in the context of the Land Use Commission's special use guidelines has been prepared in support of the request for a SUP.

Guideline: The use shall not be contrary to the objectives sought to be accomplished by Chapters 205 and 205A, HRS, and the rules of the Commission.

Response: The general intent of the State Land Use law is "*to preserve, protect, and encourage the development of land in the State for those uses to which they are best suited in the interest of the public health and welfare of the State of Hawai'i*". The continued operation of the Hana Landfill at the existing and proposed expanded site would maintain a service that the County has been providing to the island of Maui for 37 years (since 1969) and will ensure that homeowners and businesses are

provided with a place to dispose their waste products. Compliance with all applicable regulatory requirements will be rendered in the continued operation of the landfill. The proposed action is not considered to be contrary to the objective of Chapters 205 and 205A, HRS, and the rules of the Land Use Commission.

Guideline: The desired use would not adversely affect surrounding property.

Response: The County's expansion of the landfill will be located in an area which is surrounded by vacant lands. The closest residences are situated approximately 0.25 mile to the west and south. Adverse impacts to surrounding properties are not anticipated as a result of the proposed action.

Guideline: The use would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage and school improvements, and police and fire protection.

Response: The existing and expanded landfill site will not require any further public improvements to roadway, sewer, or water systems. Drainage system improvements, however, will need to be carried out in compliance with provisions of the Clean Water Act. The expansion of the landfill is necessary to accommodate the drainage improvements. In addition, the landfill operations will not affect educational or recreational facilities, nor will it impact police and fire protection, or emergency medical services.

Guideline: Unusual conditions, trends, and needs have arisen since the district boundaries and rules were established.

Response: New federal regulations regarding environmental monitoring and drainage improvements have been passed by the government since 1969, which govern landfills. The proposed action is required to meet these new regulations.

Guideline: The land upon which the proposed use is sought is unsuited for the uses permitted within the district.

Response: Lava flows underly the project site. The flows are a mass of clinkery, hard, glassy, sharp pieces of lava, making the land difficult to till and unsuitable for cultivation.

B. MAUI COUNTY GENERAL PLAN

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter,

The general plan shall indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain the opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density, land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.

The proposed action is in keeping with the following objectives and policies of the Maui County General Plan.

Objective: To provide efficient, safe and environmentally sound systems for the disposal and refuse of liquid and solid wastes.

Policy: Establish programs for the development of waste disposal systems which anticipate planned growth.

C. HANA COMMUNITY PLAN

The existing Hana landfill site is designated by the Hana Community Plan for Public/Quasi-Public land use. See Figure 10. The additional lands subject to the landfill realignment are designated by the Hana Community Plan for both Light Industrial and Agricultural land uses. The proposed landfill realignment and grading improvements are consistent with the underlying community plan designations. In addition, the proposed project is consistent with the following Goal and Policy for the Physical Infrastructure of the Hana Community Plan.

Goal

Timely and environmentally sensitive development and maintenance of infrastructure systems which protect and preserve the safety and health of the Hana region's residents and visitors, including the provision of domestic water, utility and waste disposal services, and

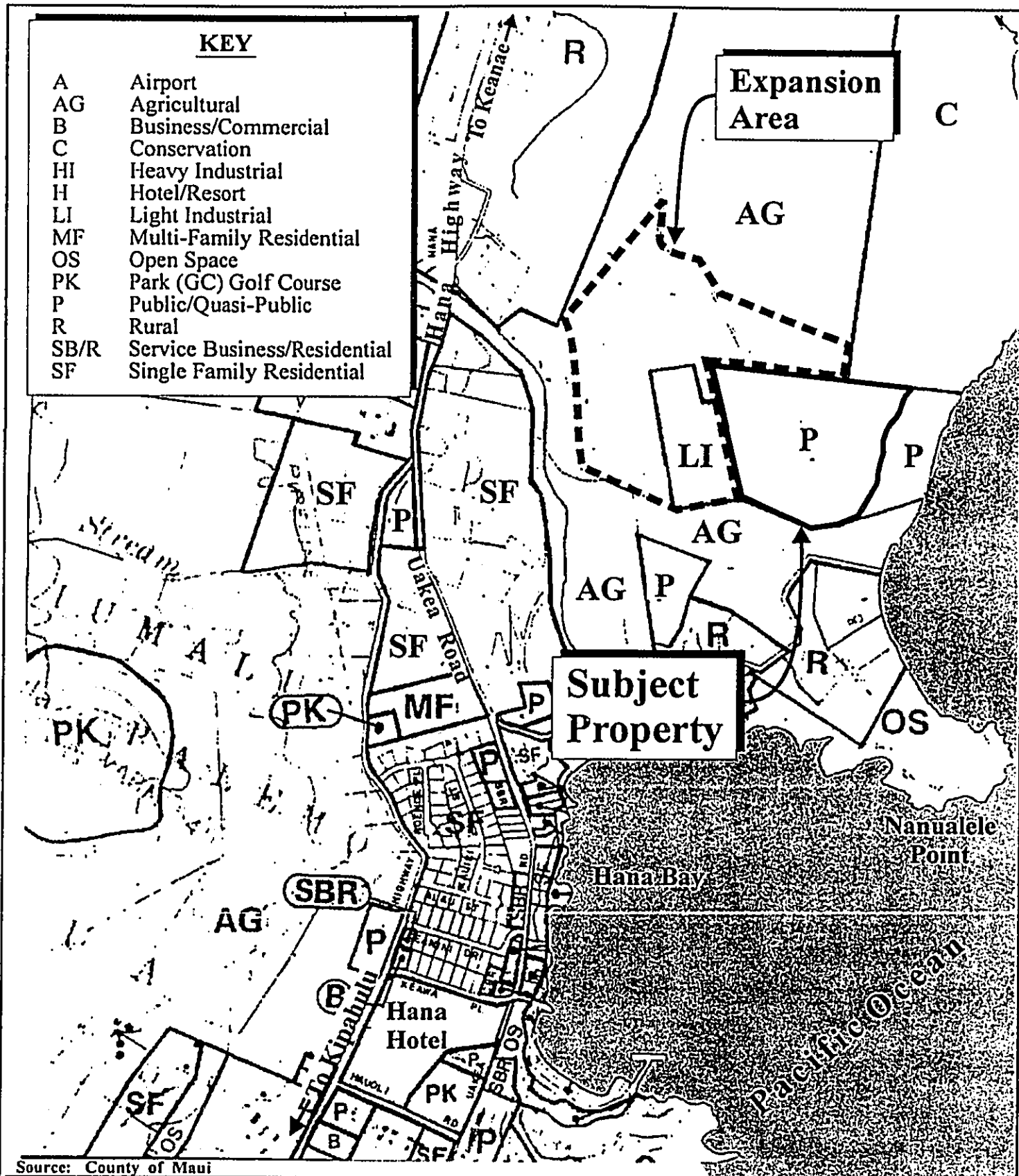


Figure 10 County of Maui's Hana Landfill
Land Acquisition
Community Plan Land Use Map



Prepared for: County of Maui, Department of Public Works
and Environmental Management

MUNEKIYO & HIRAGA, INC.

COMDPWHanaLFxplud

effective transportation systems which meet the needs of residents and visitors while protecting the region's natural character.

Policy (Solid Waste)

Develop and implement a comprehensive waste management plan which includes reduction, recycling and reuse of solid waste and wastewater as major plan components.

The proposed improvements are consistent with the policy statement above, seeking to implement a comprehensive waste management plan for the East Maui area. The additional buffer area will be utilized for monitoring purposes, which will enable the continuation of the County's landfill monitoring and recycling programs. The proposed grading activities will provide for proper collection and detention of onsite drainage.

D. ZONING

Permitted uses and performance standards are set forth by Title 19 of the Maui County Code relating to zoning. Infrastructural systems, including roadway and supporting structures (e.g., drainage basins), are permitted in each of the County zoning districts.

Parcel 12, the existing landfill site, is County zoned Interim. See Figure 11. The 45.14-acre portion of Parcel 7 proposed to be added to the landfill site is County zoned Interim and Agricultural. The proposed detention basin is considered an integral element for agricultural land conservation since it will manage storm runoff and as such is a permitted use in the Agricultural district.

The portion of the landfill operations which encroaches onto Parcel 7, covering an area of approximately 5.4 acres, is zoned Interim and Agricultural. Pursuant to Maui County Code (MCC), Chapter 19, Article 1, Interim Zoning Provisions, Non-Conforming Uses, it states, "*Any lawful use of land or building or structure existing or under construction at the time this ordinance was adopted may be continued....*".

Pursuant to Maui County Code Section 19.30A.060(L), landfills are permitted by special use permit in the Agricultural district Section 19.510.070 of the Maui County Code relating to Special Use Permits (SUP), the following criteria for permit approval shall be addressed.

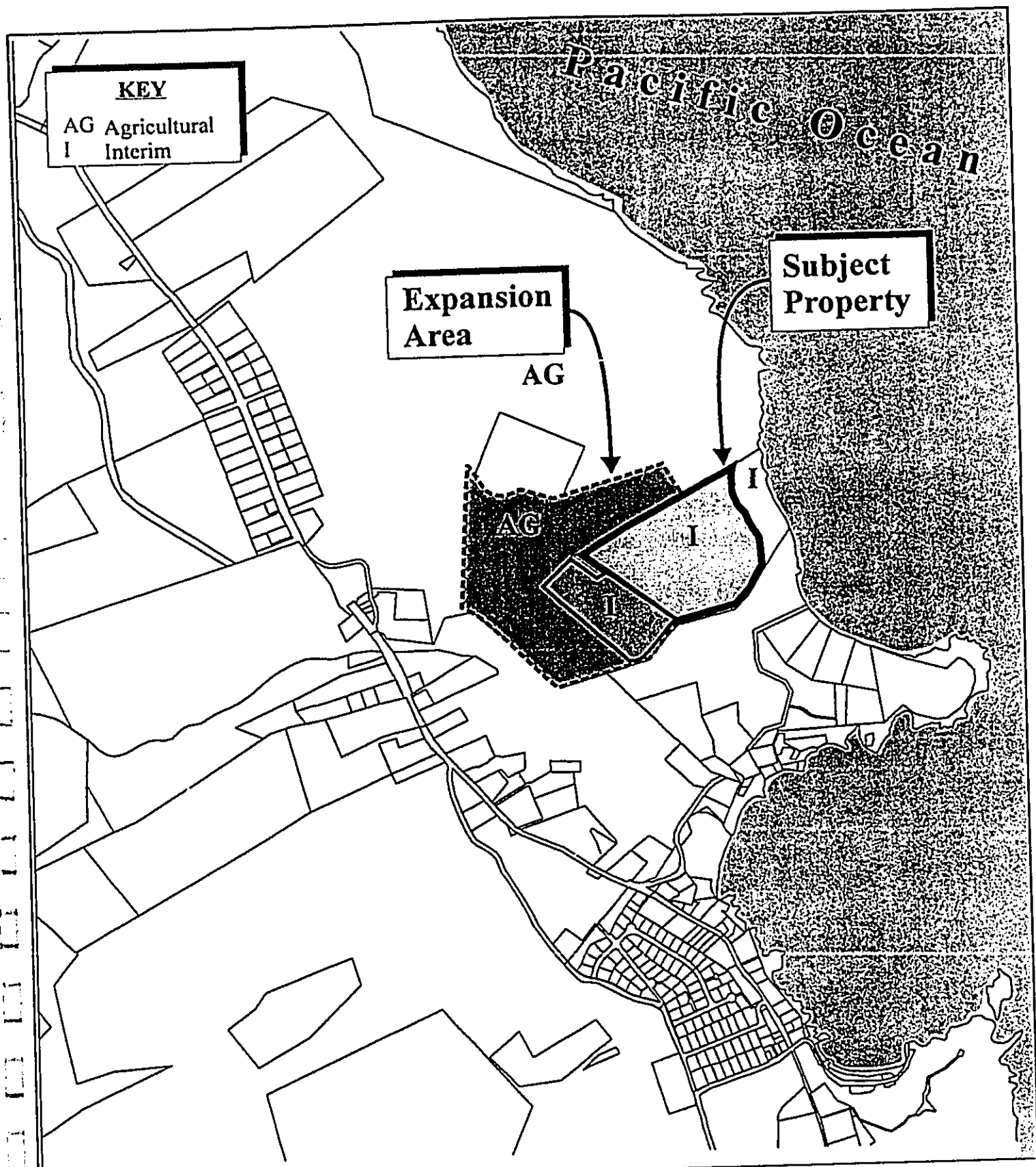


Figure 11 County of Maui's Hana Landfill
 Land Acquisition
 Parcel Zoning Map NOT TO SCALE

Prepared for: County of Maui, Department of Public Works
 and Environmental Management

MUNEKIYO & HIRAGA, INC.
 COMDPWHanaLHParcel Zoning Map

1. **The proposed request meets the intent of the General Plan and the objectives and policies of the applicable community plan of the County.**

The proposed request is consistent with the General Plan's objective and policies for liquid and solid waste.

Objective: To provide efficient, safe and environmentally sound systems for the disposal and reuse of liquid and solid wastes.

Policies:

- a. Explore new waste disposal methods that are safe, economical, environmentally sound, and aesthetically pleasing and that minimize the disposal of wastes in landfills.
- b. Establish programs for the development of waste disposal systems which anticipate planned growth.
- c. Establish comprehensive environmental and public health standards for the treatment, disposal and/or reuse of liquid and solid waste.
- d. Develop comprehensive and publicly acceptable methods of recycling solid and liquid waste.
- e. Encourage and promote public awareness to reduce, reuse, recycle and compost waste materials.

The subject property is located within the Hana Community Plan region and is designated Public/Quasi-Public, Light Industrial and Agricultural in the Community Plan Land Use Map. Land use objectives and policies contained in the plan supports special permits "to allow those activities which are essential to the region's economic well-being, which provide essential services for the residents of the Hana District".

2. **The proposed request is consistent with the applicable community plan land use map of the County.**

The community plan's "Public/Quasi-Public", "Light Industrial" and "Agricultural" designations for the subject property provide for uses such as those presently undertaken at the Hana Landfill facility.

3. **The proposed request meets the intent and purpose of the applicable district.**

Existing uses at the property have been deemed to meet the criteria for the State LUC's SUP for the State Agricultural district. The Interim district allows the continuation of non-conforming uses.

4. **The proposed development will not adversely affect or interfere with public or private schools, parks, playgrounds, water systems, sewage and solid waste disposal, drainage, roadway and transportation systems, or other public requirements, conveniences and improvements.**

There are no significant adverse impacts to public services and infrastructure associated with the continued operation of Hana Landfill facility.

5. **The proposed development will not adversely impact the social, cultural, economic, environmental and ecological character and quality of the area.**

There are no anticipated adverse impacts to the socio-economic fabric of the community as a result of the continued operation of the Hana Landfill facility. Similarly, there are no anticipated adverse impacts to the environmental and ecological character of the area.

6. **The public shall be protected from the deleterious effects of the proposed use.**

Regular sampling from three (3) groundwater monitoring wells and testing indicate no evidence of groundwater contamination as a result of the Hana Landfill operations. A detention basin is proposed to contain runoff from the active landfill area to ensure no adverse impacts to downstream properties results from the operations.

7. **That the need for public service demands created by the proposed use shall be fulfilled.**

The continued operation of the Hana Landfill facility will not place new demands upon public service systems. The proposed action supports and enhances the viability of the region's solid waste collection system.

8. If the use is located in the State Agricultural and Rural Districts, the Maui Planning Commission shall review whether the use complies with the guidelines established in Section 15-15-95 of the Rules of the Land Use Commission of the State of Hawai'i.

Pursuant to Section 15-15-95, Administrative Rules of the Hawai'i Land Use Commission Rules, the LUC Rules provide that certain "unusual and reasonable" uses may be permitted within the "Agricultural" district. The proposed project is consistent with the guidelines for determining an "unusual and reasonable" use as follows:

Guideline: The use shall not be contrary to the objectives sought to be accomplished by Chapters 205 and 205A, HRS, and the rules of the Commission.

Response: The general intent of the State Land Use Law "*is to preserve, protect and encourage the development of land in the State for those uses to which they are best suited in the interest of the public health and welfare of the State of Hawai'i*". In continuing to serve as a waste disposal and recycling facility for the Hana region, the subject action provides a local infrastructure service without adversely affecting the public health and welfare. In this context, the continued use of the property for landfill operations is not considered to be contrary to the objectives of Chapters 205 and 205A, HRS and the rules of the Land Use Commission.

Guideline: The desired use would not adversely affect surrounding property.

Response: A buffer zone around the active portion of the landfill area will be provided. As such, adverse impacts to surrounding properties are not anticipated as a result of continued facility operations.

Guideline: The use would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage and school improvements, and police and fire protection.

Response: The use of the property for landfill operations will not impact roadway, water, wastewater and drainage systems. In addition, the project will not impact requirements of schools, police and fire protection, and other public services.

Guideline: Unusual conditions, trends, and needs have arisen since the district boundaries and rules were established.

Response: Since the district boundary rules were established, compliance with the requirements set forth in Title 40 of the Code of Federal Regulations (October 9, 1993), as well as permit conditions written by the State Department of Health, requires the expansion of the landfill operations to incorporate the monitoring wells and detention basin.

Guideline: The land upon which the proposed use is sought is unsuited for the uses permitted within the district.

Response: The land upon which the proposed use is sought is comprised primarily of a type of basaltic lava flow commonly referred to as a`a. The flows are a mass of clinkery, hard, glassy, sharp pieces of lava and unsuitable for agriculture.

E. SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES

The proposed project site is located within the County of Maui's Special Management Area (SMA). Pursuant to Chapter 205A, Hawai'i Revised Statutes, and the SMA Rules and Regulations for the Maui Planning Commission, actions proposed within the SMA are evaluated with respect to SMA objectives, policies and guidelines. (It is noted that Chapter 205A, HRS was adopted in 1977 by the State of Hawai'i, after the Hana Landfill was opened.) This section addresses the proposed action, as well as the existing landfill operations and the 5.4-acre encroachment area, as related to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Maui Planning Commission.

1. Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

- (A) Improve coordination and funding of coastal recreational planning and management; and
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

- (ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
- (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
- (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
- (v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;
- (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
- (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and
- (viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed boundary realignment and existing landfill operations and the encroachment area will not result in any adverse physical alterations to the environment. Construction of the proposed detention basin is designed to collect and retain onsite runoff, and will not result in adverse impacts to coastal recreational resources. Further, access to and along the shoreline environment, including the ancient Pi'ilani Trail, are located outside the project boundaries and will not be impeded by the proposed grading activities. The Pi'ilani Trail is located within a 250 to 300 foot conservation area between the eastern landfill boundary and the coastline.

2. Historic Resources

Objective: Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- (A) Identify and analyze significant archeological resources;
- (B) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- (C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: An archaeological assessment was conducted on the subject property, indicating that the lands underlying the project site have been significantly altered during prior grading and landfill activities. There are no significant material culture remains identified by the inspection. SHPD determined the proposed project is anticipated to have "no effect" on historic properties. Refer to Appendix "G-1". In the event that any subsurface archaeological resources are encountered during grading activities all work will be halted in the vicinity of the find and SHPD will be contacted immediately to determine an appropriate mitigation strategy.

3. Scenic and Open Space Resources

Objective: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

- (A) Identify valued scenic resources in the coastal zone management area;
- (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
- (D) Encourage those developments that are not coastal dependent to locate in

inland areas.

Response: The project site is not located within a significant coastal view corridor. The proposed boundary realignment and construction of drainage improvements are not anticipated to result in adverse impacts to shoreline views or open space resources. The active landfill operations are located over 350 feet from the shoreline. The encroachment area is located approximately 1,000 feet from the shoreline.

4. **Coastal Ecosystems**

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Improve the technical basis for natural resource management;
- (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Response: During construction of the detention basin, BMPs will be utilized to ensure that grading activities do not adversely impact coastal ecosystems. Runoff from active landfill operations will be channeled and directed to the newly constructed detention basin. Further, the DPWEM will continue to maintain its semi-annual groundwater monitoring program as well as use of BMPs during daily landfill operations to prevent adverse impacts to the surrounding environment.

5. **Economic Uses**

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- (A) Concentrate coastal dependent development in appropriate areas;
- (B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- (C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - (i) Use of presently designated locations is not feasible;
 - (ii) Adverse environmental effects are minimized; and
 - (iii) The development is important to the State's economy.

Response: The landfill operation has been ongoing at the subject property since 1969 and is a suitable location for the landfill site. The proposed project is not anticipated to result in significant impacts to the economy of East Maui and Maui County. In the long term, the project will improve the DPWEM's ability to handle solid waste in the Hana region.

6. **Coastal Hazards**

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

- (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
- (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;

- (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- (D) Prevent coastal flooding from inland projects.

Response: According to the Flood Insurance Rate Map for the area, a portion of Parcel 12 is located within Zone A4, an area of the 100-year flooding. Landfill operations are in upland areas, located at elevations in excess of 40 feet. Implementation of the project is not anticipated to increase the region's susceptibility to coastal hazards.

7. Managing Development

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- (B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
- (C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: In compliance with the requirements of Chapter 343, Hawai'i Revised Statutes, this Environmental Assessment has been prepared to facilitate public understanding and involvement with the proposed project.

8. Public Participation

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

- (A) Promote public involvement in coastal zone management processes;
- (B) Disseminate information on coastal management issues by means of

educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and

- (C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Response: As previously noted, public awareness of the project is being promoted through the Environmental Assessment process. The proposed project is not contrary to the objectives of public awareness, education and participation.

9. **Beach Protection**

Objective: Protect beaches for public use and recreation.

Policies:

- (A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
- (B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- (C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: During grading activities associated with the construction of the drainage detention basin, appropriate BMP's will be utilized to ensure the downstream coastal environment is not adversely impacted. The landfill activities in the encroachment area are approximately 1,000 feet from the shoreline. A 250 to 300 foot conservation area exists between the current landfill eastern boundary and the shoreline. The conservation designated area protects the beaches for public use and recreation.

10. **Marine Resources**

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

- (A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
- (C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- (D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
- (E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed grading improvements are designed to collect and detain onsite runoff from the active landfill area and are not anticipated to adversely impact coastal marine resources.

In addition to the foregoing objectives and policies, SMA permit review criteria pursuant to Act 224 (2005) provides that:

No Special Management Area Use Permit or Special Management Area Minor Permit shall be granted for structures that allow artificial light from floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:

- (1) Directly illuminates the shoreline and ocean waters; or
- (2) Is directed to travel across property boundaries toward the shoreline and ocean waters.

Response: All landfill operations are carried out during daylight hours. There are no artificial outdoor lights that directly illuminates the shoreline or ocean waters.

**IV. SUMMARY OF
ADVERSE
ENVIRONMENTAL
EFFECTS WHICH
CANNOT BE AVOIDED**

IV. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Grading activities associated with daily operations and construction of the runoff detention basin will result in certain unavoidable operational and construction-related impacts, including noise-generated impacts and air quality impacts associated with the operation of equipment. Air quality will also be impacted by dust generated from site work. However, all operational and construction-related impacts will be temporary and mitigated through implementation of appropriate BMP's. In light of current landfill operations and the future benefits to be realized upon implementation of proposed drainage improvements, the impacts associated with the existing landfill in the encroachment area grading activities are not anticipated to be significant.

V. ALTERNATIVES TO THE PROPOSED ACTION

V. ALTERNATIVES TO THE PROPOSED ACTION

The proposed action is necessary to comply with Title 40 of the Code of Federal Regulations (CFR), which sets forth minimum national criteria under the Resource Conservation and Recovery Act, for all municipal solid waste landfill (MSWLF) units and under the Clean Water Act. All municipal MSWLF units that receive waste on or after October 9, 1993 are required to meet the provision of Title 40 which in the case of the Hana Landfill included environmental monitoring stations (groundwater and methane gas) and a new detention basin to capture onsite runoff.

The boundary modification is required to address encroachment of existing landfill operations and inclusion of areas for environmental monitoring.

A. PREFERRED ALTERNATIVE

The alternatives considered to meet the requirements of Title 40 CFR were limited due to the locational requirements of the methane gas monitoring, groundwater monitoring wells, detention basin and site topography. The monitoring well locations were selected based on local topography and groundwater flow direction beneath the landfill. Field investigations determined that groundwater does not flow eastward from the landfill area towards the ocean, but instead flows in a southerly direction away from the site. As such, the monitoring wells were located to the south (down-gradient) and north (upgradient) of the landfill site. The methane gas probes were located in proximity to the landfill boundaries in the vicinity of the municipal solid waste area to measure concentration of methane gas at the property boundary. The location of the detention basin was determined by topography and designed downslope of the active face of the landfill in order to capture and detain onsite runoff.

B. NO ACTION ALTERNATIVE

The no action alternative would mean the Hana Landfill would not be in compliance with Title 40 CFR and would not be able to operate as a MSWLF. All landfill and recycled material would have to be hauled to the Central Maui landfill. The "no action alternative" would result in an inefficient and costly waste disposal service for the Hana region and an

inconvenience to the local residents and businesses.

C. **DEFERRED ACTION ALTERNATIVE**

A "deferred action" alternative will have similar consequences as a "no action" alternative as the Hana Landfill would not be in compliance to Title 40 CFR, would not be able to obtain a Department of Health permit and would eventually be forced to cease operating as a MSWLF.

**VI. IRREVERSIBLE AND
IRRETRIEVABLE
COMMITMENT OF
RESOURCES**

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed action will involve the commitment of additional lands, fuel, labor, funding and material resources. Given the need for operational compliance with State and County Land Use regulations and the need to expand the Hana Landfill facility, the commitment of resources is justified based on the eventual benefits to be realized through project implementation.

VII. FINDINGS AND CONCLUSIONS

VII. FINDINGS AND CONCLUSIONS

The proposed project has been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Hawai'i Administrative Rules. Based on the following analysis, the proposed project is not anticipated to result in any significant impacts. Discussion of project conformance to the criteria is noted as follows:

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.

The proposed project will be limited to existing landfill operations, a boundary line realignment and construction of an onsite detention basin. According to an archaeological assessment completed for the DPWEM, implementation of the project is not anticipated to result in adverse impacts to archaeological resources. No identified rare, endangered or threatened species of flora, fauna or avifauna have been identified within the vicinity of the project site. The proposed project is not anticipated to result in destruction of natural or cultural resources.

2. Curtails the range of beneficial uses of the environment.

The proposed project involves the incorporation of leased land for grazing and lands currently utilized for landfill operations and environmental monitoring. The leaseholder does not object to the boundary expansion. The existing landfill operations are activities which have been going on at the site since 1969. The proposed landfill boundary realignment and construction of the runoff detention basin is not anticipated to curtail the range of beneficial uses of the environment.

3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

The State Environmental Policy and Guidelines are set forth in Chapter 344, Hawai'i Revised Statutes. The proposed action is not contrary to the policies and guidelines set forth in Chapter 344, HRS.

4. **Substantially affects the economic welfare, social welfare, and cultural practices of the community or State.**

There are no adverse long-term economic or social welfare impacts anticipated as a result of project implementation. Regular monitoring of landfill activities indicate the landfill has not adversely impacted the social welfare of the community.

5. **Substantially affects public health.**

The existing landfill activities and the encroachment area and proposed boundary realignment will not adversely impact public health. Construction of the detention basin will ensure collection and retention of onsite runoff consistent with the requirements of the Clean Water Act. The existing landfill has been in operation since 1969. Adverse effects to public health have not been identified from current operations. No long-term negative impacts to the public's health and welfare are anticipated as a result of the proposed action. Environmental monitoring continues to be carried out at the site to prevent potential adverse impacts to public health.

6. **Involves substantial secondary impacts, such as population changes or effects on public facilities.**

The proposed project is not anticipated to result in secondary impacts such as population changes or increased demands on regional public facilities.

7. **Involves a substantial degradation of environmental quality.**

The existing landfill operations have been ongoing since 1969. During grading of the proposed detention basin, appropriate BMPs will be utilized to ensure that potential adverse environmental effects are mitigated. No substantial degradation of the environment is anticipated as a result of project implementation. Environmental monitoring of methane gas and groundwater are regularly carried out to ensure the environmental quality of landfill operations.

8. **Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.**

The proposed project does not represent a commitment to larger actions. The

proposed action addresses compliance requirements for an existing landfill and is not anticipated to create or contribute to any significant long-term environmental effects.

9. Substantially affects a rare, threatened, or endangered species, or its habitat.

There are no known or identified habitats of rare, threatened or endangered species of flora or fauna in the vicinity of the project site and expansion area. Given the scale and location of the drainage improvements, no habitats or natural environments are anticipated to be adversely affected by the proposed project.

10. Detrimentially affects air or water quality or ambient noise levels.

Appropriate BMPs will be implemented during grading of the detention basin to ensure that adverse environmental impacts on air quality and ambient noise levels are mitigated. The DPWEM will continue to monitor the quality of groundwater in the project vicinity to ensure that potential impacts to water quality are avoided.

In the long term, the proposed project is not anticipated to have a significant impact on air quality, water quality or noise parameters.

11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

The lands utilized for active landfill areas are not considered to be erosion prone or geologically hazardous. There are no estuaries or coastal waters which are adversely impacted by daily landfill operations. Proposed drainage improvements are not anticipated to adversely impact environmentally sensitive areas.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The proposed project is not identified as a scenic vista or viewplane. The boundary realignment and grading of a drainage detention basin will not affect scenic corridors and coastal scenic and open space resources.

13. Requires substantial energy consumption.

The proposed project will result in the short-term commitment of fuel for equipment, vehicles and machinery during grading activities. However, the short-term energy demand is not considered substantive or excessive within the context of the region's overall energy consumption. In the long term, the project is not anticipated to create additional demands for energy consumption.

Based on the foregoing findings, it is anticipated that the proposed action will result in a finding of no significant impacts (FONSI).

**VIII. AGENCIES
CONSULTED DURING THE
PREPARATION OF THE
DRAFT ENVIRONMENTAL
ASSESSMENT; LETTERS
RECEIVED AND
RESPONSES TO
SUBSTANTIVE
COMMENTS**

VIII. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were consulted during the early consultation process in the preparation of the Draft Environmental Assessment which was published in The Environmental Notice on November 23, 2004. Letters received and responses to substantive comments are included in this section.

- | | |
|--|---|
| 1. Ranae Ganske-Cerizo,
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Wailuku, Hawai'i 96793 |
| 3. Paul Henson, Ph.D.
U. S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm. 3-122, Box 50088
Honolulu, Hawai'i 96813 | 8. Peter Young, Chairperson
State of Hawai'i
Department of Land and Natural
Resources
P. O. Box 621
Honolulu, Hawai'i 96809 |
| 4. Ted Liu, Director
State of Hawai'i
Department of Business, Economic
Development & Tourism
P.O. Box 2359
Honolulu, Hawai'i 96804 | 9. Melanie Chinen, Administrator
State of Hawai'i
Department of Land and Natural
Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai'i 96707 |
| 5. Mary Lou Kobayashi, Planning Program
Administrator
State of Hawai'i
Office of Planning
P.O. Box 2359
Honolulu, Hawai'i 96804 | 10. Barry Fukunaga, Director
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813 |

- | | |
|--|---|
| <p>11. Clyde Namu'o, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai'i 96813</p> <p>12. Carl Kaupololo, Chief
County of Maui
Department of Fire
and Public Safety
200 Dairy Road
Kahului, Hawai'i 96732</p> <p>13. Vanessa Medeiros, Director
County of Maui
Department of Housing and
Human Concerns
200 S. High Street
Wailuku, Hawai'i 96793</p> <p>14. Jeffrey Hunt, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawai'i 96793</p> <p>15. Tamara Horcajo, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2
Wailuku, Hawai'i 96793</p> <p>16. Thomas Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawai'i 96793</p> <p>17. Milton Arakawa, Director
County of Maui
Department of Public Works
and Environmental Management
200 South High Street
Wailuku, Hawai'i 96793</p> <p>18. Don Medeiros, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawai'i 96793</p> | <p>19. Jeffrey Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawai'i 96793</p> <p>20. Neal Shinyama, Manager – Engineering
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawai'i 96733</p> <p>21. Hana Community Association
P.O. Box 202
Hana, Hawai'i 96713</p> <p>22. Dan Omer
Hana Ranch Partners
P.O. Box 519
Hana, Hawai'i 96713</p> |
|--|---|

JUL 07 2003



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

July 2, 2003

Regulatory Branch

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

This letter responds to your request for comments on the Hana Landfill Acquisition project, dated June 20, 2003. The acquisition of property by itself will not require a Department of the Army (DA) permit; however, based on the information you provided I am unable to determine if a DA permit will be required for operation of the land fill in this area. Please provide information concerning the presence or absence of streams or other water bodies or wetlands on the property, and if present, what effect the project will have on them. Please place us on the mailing list for any future environmental documents concerning this project.

If you have any questions concerning this matter, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200300483.

For your information, the correct address for this office is:

Regulatory Branch
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858-5440

Sincerely,

A handwritten signature in cursive script, appearing to read "George P. Young".

George P. Young, P.E.
Chief, Regulatory Branch


MUNEKIYO & HIRAGA, INC.

March 3, 2004

George P. Young, P.E.,
Chief Regulatory Branch
Department of Army
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858-5440

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Mr. Young:

Thank you for your letter dated July 2, 2003 providing comments on the subject proposal. We wish to provide the following information in response to your comments.

We acknowledge the acquisition of property by itself will not require a Department of Army (DA) permit.

In response to your comment whether the operation of the landfill in this area will require a DA permit, please note that further coordination with the Corps of Engineers will be carried out during the environmental assessment process to determine DA permitting requirements, if any.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,



Mich Hirano, AICP
Planner

MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management

com/dpw/hana/lanmy.res

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • planning@mhinc.com

environment
planning
government

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

JUL 02 2003
RODNEY K. HARAGA
DIRECTOR

Acting Deputy Director
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-P
03.0165

June 27, 2003

Mr. Dean K. Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: Hana Landfill Land Acquisition
Request for Early Consultation

In response to your letter of June 20, 2003, the Department of Transportation, Airports Division finds no significant impact at this time.

Thank you for giving us the opportunity to provide our comments. If you have any questions, please contact Mr. Steve Takashima, Head Planner, at (808) 838-8811.

Sincerely,


DAVIS K. YOGI
Airports Administrator

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

JUL 16 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAOLOAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

July 11, 2003

LD-NAV
HANALANDFILLMAUI.RCM

Munekiyo and Hiraga, Inc.
Dean K. Frampton, Planner
305 High Street, Suite 104/
Wailuku, Hawaii 96793

Dear Mr. Frampton:

SUBJECT: Early Consultation, County of Maui's Hana Landfill Acquisition
Hana, Island of Maui, Hawaii - TMK: 1-3-006; 007 (Por.)

Thank you for the opportunity to review and comment on the subject matter.

The Department of Land and Natural Resources' (DLNR) Land Division distributed a copy of your letter (summary of the project) and site map dated June 20, 2003 to the following DLNR Divisions for their review and comment:

- Division of Aquatic Resources
- Division of Forestry and Wildlife
- Na Ala Hele Trails
- Division of State Parks
- Engineering Division
- Commission on Water Resource Management
- Office of Conservation and Coastal Lands
- Land Division Maui District Land Office

Attached is a copy of the Commission on Water Resource Management and Maui District Land Office comments.

Based on the attached responses, the Department of Land and Natural Resources has no other comment to offer at this time.

If you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,

DIERDRE S. MAMIYA
Administrator

C: MDLO
OCCL

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

ERNEST T. YOUNG
CHAIRPERSON
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
CHIYOME L. FUKINO, M.D.
BRIAN C. NISHIDA
HERBERT M. RICHARDS, JR.

ERNEST Y.W. LAU
DEPUTY DIRECTOR

July 2, 2003

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: Ernest Y.W. Lau, Deputy Director *EYWL*
Commission on Water Resource Management (CWRM)

SUBJECT: Hana Landfill Land Acquisition

FILE NO.: HANALANDFILLMAUI.CMT

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- ☐ We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- ☐ We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- ☒ We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- ☐ A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- ☐ The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- ☐ Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- ☐ We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- ☐ If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- ☐ If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- ☒ OTHER

The property appears to involve brackish anchialine ponds, which would suggest involvement by Department of Health in determining the appropriateness of the site.

If there are any questions, please contact Charley Ice at 587-0251.

2003 JUL -8 A 9:45
RECEIVED
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

LINDA LINGLE
GOVERNOR OF HAWAII



2003 JUN 26 PM 9:35



DIVISION OF
LAND MANAGEMENT

2003 JUN 27 PM 1:43

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 26, 2003

DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: HANALANDEFILLMAUI.CMT

Suspense Date: 7/7/03

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
~~XXX Maui District Land Office~~

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division *Charlene*

SUBJECT: Early Consultation, County of Maui's Hana Landfill Land
Acquisition, Hana, Maui - TMK: 1-3-006: 007 (por)

Please review the attached letter dated June 20, 2003 (summary of project) pertaining to the subject matter and submit your comments on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

() We have no comments.

(✓) Comments attached.

Division Maui District Land Office

Signed: *Jan K. Kyg*

Title: District Land Agent

Date: 7-7-03

LINDA LINGLE
GOVERNOR OF HAWAII



PHONE: (808) 964-8103
FAX: (808) 964-8111

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

54 High Street, Room 101
Honolulu, Hawaii 96813

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER
COMMISSION ON WATER RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONSERVATION
CONSERVATION AND RESOURCES ENFORCEMENT
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

July 7, 2003

Ref: HANALANDFILLMAUL.CMT

MEMORANDUM

TO: Dierdre S. Mamiya, Administrator
Land Division

FROM: Jason K. Koga, District Land Agent *J. Koga*
Maui District Land Office

SUBJECT: Early Consultation Request for Preparation of a Draft Environmental Assessment,
County of Maui's Hana Landfill Land Acquisition, Hana, Maui, Tax Map
Key: (2) 1-3-006:007 (por.)

The proposed areas to be acquired are part of the premises leased to Lloyd Abreu via General Lease No. S-4524 for pasture purposes. The lease expires on August 31, 2016.

Earlier correspondence on the proposed expansion of the landfill have been provided to Mr. Abreu with no responses of concern; however, it may be prudent for the Department of Public Works and Environmental Management to communicate directly with Mr. Abreu.

The address we have on file for Mr. Abreu is: 2095 Lilikoi Road, Haiku, Hawaii 96708.

Thank you for the opportunity to provide comments on the matter.

c: N. Vaccaro
District Files

LINDA LINGLE
GOVERNOR OF HAWAII



DIVISION OF AQUATIC RESOURCES	
DIRECTOR	Suspense Date:
COM FISHERIES	Draft Reply <input type="checkbox"/>
AQ REC/ENV	Reply Direct <input type="checkbox"/>
AQ RECR/N	Comments <input type="checkbox"/>
SALES	Information <input type="checkbox"/>
	Comp Act & File <input type="checkbox"/>
	Return to:
	Copies to:
	Initials:

103-51021



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 26, 2003

DAN DAVIDSON
DEPUTY DIRECTOR - LAND
ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

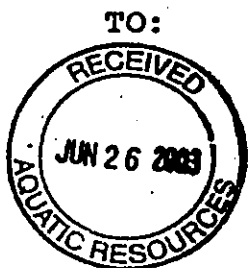
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: HANALANDFILLMAUI.CMT

Suspense Date: 7/7/03

MEMORANDUM:



TO: ~~XXX~~ Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division *Charlene*

SUBJECT: Early Consultation, County of Maui's Hana Landfill Land
Acquisition, Hana, Maui - TMK: 1-3-006: 007 (por)

Please review the attached letter dated June 20, 2003 (summary of project) pertaining to the subject matter and submit your comments on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(X) We have no comments.

() Comments attached.

Division DAP

Signed: *D. Davis*

Title: _____

Date: 7/7/03


MUNEKIYO S. HIRAGA, INC.

March 3, 2004

Dierdre S. Mamiya, Administrator
State of Hawaii
Department of Land and
Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Ms. Mamiya:

Thank you for your letter dated July 11, 2003 providing comments from the Commission on Water Resource Management (CWRM) and Maui District Land Office on the subject proposal. We wish to provide the following information in response to their comments.

1. **Response to Comments from CWRM**

The location of the brackish anchialine ponds are to the southwest of the landfill site on the adjacent private property. There are no surface ponds on the landfill property, nor on the proposed expansion area. Results from the groundwater monitoring program that has been carried out at Hana Landfill for the past 10 years indicate that the landfill operations has not had an adverse impact on local groundwater quality. Moreover, ongoing record keeping and reporting is carried out by the Department of Public Works and Environmental Management to ensure the landfill operations are in compliance with requirements set forth in state and federal regulations and in the permit issued by the Department of Health. In addition, coordination with the Department of Health, Solid and Hazardous Waste Branch will be carried out in order to obtain approval for the proposed land acquisition and detention basin.

2. **Response to Comments From Maui District Land Office**

The Department of Public Works and Environmental Management has notified Mr. Abreu by letter dated September 3, 2003 and attached as Exhibit "A" of its intent for a boundary expansion which would incorporate a portion of the lease area, as

Dierdre S. Mamiya, Administrator
March 3, 2004
Page 2

suggested by the District Land Agent. Further coordination with the leaseholder will be carried out as required.

We note the Division of Aquatic Resources had no comments on the subject project.

Again, thank you for your department's comments and participation in the early consultation process.

Very truly yours,



Mich Hirano, AICP
Planner

MH:yp
Enclosure

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management
Lloyd Abreu

comthanalndnr.res

ALAN H. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7855



COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

September 3, 2003

SEP 03 2003

RALPH NAGAMINE, L.S., P.E.
Development Services Administration

TRACY TAKAMINE, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

JOHN D. HARDER
Solid Waste Division

Mr. Lloyd Abreu
2095 Lilikoi Road
Haiku, Hawaii 96708

Dear Mr. Abreu:

SUBJECT: Hana Landfill Expanded Boundary
TMK: (2) 1-3-006:007 (por)

We wish to bring to your attention that the County of Maui has plans to expand the boundary of the Hana Landfill and will be making application to the Department of Land and Natural Resources for this expansion.

Please note that the expansion will provide a buffer zone with adjacent properties and include an area for proposed storm water improvements only. The active portion of the landfill, that is, the location of buried solid waste, will not expand beyond its current footprint. Please refer to the attached location map.

We understand from Mr. Jason Koga, District Land Agent, Maui District Land Office, that a portion of the expanded boundary is under lease to you.

We understand you have no objections to the expanded boundary proposed. If you have any questions or comments, please call me at 270-7881.

Sincerely,

A handwritten signature in black ink, appearing to read "John Harder", is written over the typed name.

John Harder, Chief
Solid Waste Division

cc: Mr. Jason K. Koga, DLNR
Mr. Mich Hirano, Munekiyo & Hiraga, Inc.
Attach:

EXHIBIT "A"

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

AUG 04 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

July 31, 2003

LD-NAV
HANALANDFILLMAUI.RCM

Munekiyo and Hiraga, Inc.
Dean K. Frampton, Planner
305 High Street, Suite 104/
Wailuku, Hawaii 96793

Dear Mr. Frampton:

SUBJECT: Early Consultation, County of Maui's Hana Landfill Acquisition
Hana, Island of Maui, Hawaii - TMK: 1-3-006; 007 (Por.)

This is a follow-up to our letter to you date July 11, 2003, pertaining to the subject matter.

Attached is a copy of the Engineering Division comment and State Parks response.

If you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,

DIERDRE S. MAMIYA
Administrator

C: MDLO

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 26, 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
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BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: HANALANDFILLMAUI.CMT

Suspense Date: 7/7/03

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
/XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division *Charlene*

SUBJECT: Early Consultation, County of Maui's Hana Landfill Land
Acquisition, Hana, Maui - TMK: 1-3-006: 007 (por)

Please review the attached letter dated June 20, 2003 (summary of project) pertaining to the subject matter and submit your comments on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

() We have no comments.

(X) Comments attached.

Division _____

Signed: *Chet T. Ferguson*

Title: *Chief Engineer*

Date: _____

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/NAV

Re.: HANALANDFILLMAULCMT

COMMENTS

For your information, the project site is within Special Flood Hazard Areas (SFHA) designated as Zones A4 and V29 with base flood elevations determined. The National Flood Insurance Program does regulate development with this SFHA. All applicable regulations can be found in 44CFR 60.

The project must comply with rules and regulations of the National Flood Insurance Program (NFIP). If there are questions regarding the NFIP, please contact the State Coordinator, Mr. Sterling Yong, of the Department of Land and Natural Resources at 587-0248. If there are questions regarding flood ordinances, please contact Mr. Francis Cerizo at 270-7771 of the County of Maui, Department of Planning.

Should you have any questions, please call Mr. Andrew Monden of the Planning Branch at 587-0229.

Signed: *Eric T. Hirano*
ERIC T. HIRANO, CHIEF ENGINEER

Date: 7/24/03

LINDA LINGLE
GOVERNOR OF HAWAII



TO:
ADMINISTRATOR
ASST ADMIN
DEV BR
PLAN BR
RES MGT BR
CLERICAL
ADMIN ASST
INTERP BR



FOR:
CIRC/POST/STAFF RM
COMMENTS & REC
DRAFT REPLY
FILE
FOLLOW UP
INFO
RUN COPIES
RUSH DUE
SEE ME
FAX/SEND COPY TO

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809
June 26, 2003

1252
PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
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CONSERVATION AND COASTAL LANDS
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ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: HANALANDEFILLMAUI.CMT

Suspense Date: 7/7/03

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
✓ XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division *Charlene*

SUBJECT: Early Consultation, County of Maui's Hana Landfill Land
Acquisition, Hana, Maui - TMK: 1-3-006: 007 (por)

Please review the attached letter dated June 20, 2003 (summary of project) pertaining to the subject matter and submit your comments on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments.

() Comments attached.

Division State Parks

Signed: *[Signature]*

Title: S.P. Admin

Date: Jul 15 2003



March 3, 2004

Dierdre S. Mamiya, Administrator
State of Hawaii
Department of Land and
Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Ms. Mamiya:

Thank you for your letter dated July 31, 2003 providing comments from the Engineering Division and Division of State Parks on the subject proposal. We wish to provide the following information in response to comments from the Engineering Division.

We acknowledge the Flood Insurance Rate Map (FIRM) for the landfill area indicates that the eastern edge (adjacent to the ocean) of the landfill property is located in the 100-year flood zone. Average flood depths of 17 to 19 feet are expected in the flood zone located along the ocean at the property boundary. However, the Municipal Solid Waste (MSW) and other disposal areas are located in upland areas at elevations generally in excess of 40 feet mean sea level (MSL) where minimal flooding is anticipated. Therefore, the 100-year flood should not impact the waste-filled areas of the landfill. In addition, the Drainage Master Plan for the County of Maui (R.M. Towill Corporation, 1971) shows that the limit for potential tsunami inundation is generally below elevation 40 feet MSL in the vicinity of the landfill.

We note that the State Parks Division did not have any comments on the proposed project.

Dierdre S. Mamiya, Administrator
March 3, 2004
Page 2

Again, thank you for your department's comments and participation in the early consultation process.

Very truly yours,



Mich Hirano, AICP
Planner

MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management

comhanatt/dmr2.res

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

JUL 29 2003
PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

July 24, 2003

Mr. Mitch Hirano
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2003.1285
DOC NO: 0307CD49

Dear Mr. Hirano,

SUBJECT: Chapter 6E-42 Historic Preservation Review – Request for Early Consultation County of Maui's Hana Landfill Land Acquisition Kawaipapa Ahupua'a, Hana District, Island of Maui
TMK: (2) 1-3-006:007 (por.)

Thank you for the opportunity to provide comments for the Request for Early Consultation, County of Maui's Hana Landfill Land Acquisition, which was received by our staff June 23, 2003. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was conducted of the subject property. Please note that these comments are in response to an information request pertaining to early consultation and may be revised upon receipt of additional information.

Based on the submitted early consultation request, we understand the County of Maui, Department of Public Works and Environmental Management (DPWEM), Solid Waste Division, is planning to expand the limits of the Hana Landfill Facility. The DPWEM is in the process of acquiring adjacent lands from the State of Hawaii to incorporate an area of landfill encroachment. The DPWEM is seeking to acquire a portion of parcel 007 to include a buffer zone surrounding the landfill area, three methane monitoring wells, and one quality monitoring well. We understand a Conservation District Use Application (CDUA) and a Special Management Area Minor Permit are being prepared. We look forward to reviewing these documents.

A search of our records indicates an archaeological inventory survey has been conducted in 1974 on a portion of the subject property used by Hana Equipment Company for a rock crushing operation. We previously reviewed a Land Use Commission Special Use Permit Amendment Application in 1988 for the Hana Equipment Co. activities and determined, at that time, that there would be "no effect" on historic sites since the prior archaeological survey found no evidence. In view of subsequent subdivisions in this part of Hana District, however, we are not certain that the 1974 archaeological survey work covers any of the current, proposed landfill expansion area.

Mr. Mitch Hirano
Page 2

The subject area in general is likely to have once been the location of pre-Contact farming, perhaps with scattered houses. Previously identified historic sites in close proximity to the proposed project area include SIHP - 50-50-13-110 (Kauleilepo Heiau); SIHP - 109 (Kauleiula Heiau); SIHP - 107 (Waikoloa Platform), and SIHP - 1491 (Kaianalimu habitation site). Our files indicate the subject property was previously utilized as ranchlands; however, ranching activities do not necessarily have an adverse impact on historic sites. Given all of the above information, we believe it is likely that historic sites may be present in at least part of the proposed project area.

Therefore, in order to determine the effect of the proposed undertaking on historic sites, we recommend an archaeological inventory be conducted of the portion of the proposed project area that has not previously undergone a survey. The survey should be conducted prior to the commencement of any ground altering activities to determine whether significant historic sites are present. An acceptable report documenting the findings of the survey will need to be submitted to this office for review. If significant historic sites are identified, a mitigation plan may need to be developed, in consultation with this office, and executed.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

CD:jen

c: Michael Foley, Director, Dept of Planning, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793



March 3, 2004

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division
Department of Land and Natural Resources
601 Kamokila Boulevard, Room 555
Kapolei, Hawaii 96707

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Ms. McEldowney:

Thank you for your letter dated July 24, 2003 providing comments on the subject proposal. We wish to provide the following information in response to your comments.

Subsequent to your letter, the project archaeologist, Xamanek Researches contacted Dr. Melissa Kirkendall of the Maui State Historic Preservation Division (SHPD) office to discuss the appropriate level of study for the proposed project area. It was subsequently determined that an archaeological assessment would likely be sufficient, since the general area had been impacted by previous grading activities associated with landfill operations. Consequently, an archaeological assessment was carried out in July 2003. The Archaeological Assessment Report was submitted to SHPD and is currently under review. The findings of the archaeological assessment will be included in the Draft environmental assessment along with the report and SHPD review.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Mich Hirano, AICP
Planner

MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management
Michael W. Foley, Director, Department of Planning
Cultural Resources Commission, Department of Planning

corridpw@hawaii.gov

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808) 244-2015 • fax: (808) 244-8729 • planning@mhinc.com

environment
planning
government

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH

P.O. BOX 3378
HONOLULU, HAWAII 96801

JUL 17 2003

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD / WB

M1 03 06 07.wpd
WP8 030599

July 14, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Frampton:


Subject: Request for Early Consultation
County of Maui's Hana Landfill Land Acquisition
Hana, Maui
TMK: (2) 1-3-006: 007 (portion)

We have reviewed the subject document which requests early consultation and comments. We have the following to offer:

The area is located within the critical wastewater disposal area as determined by the Maui County Wastewater Advisory Committee. No new cesspools will be allowed in the subject area. Further, as there is no available County sewer system in the vicinity, any domestic wastewater generated on site must be treated by an individual wastewater system, such as septic tank. Use of a porta-potty style wastewater systems are not encouraged as a means of wastewater disposal.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." Other programs within the Department may be making comments under separate cover. We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at direct toll free no. 984-2400, extension 64294.

Sincerely,


HAROLD K. YEE, P.E., CHIEF
Wastewater Branch



March 3, 2004

Harold K. Yee, P.E., Chief
State of Hawaii
Department of Health
Wastewater Branch
P.O. Box 3378
Honolulu, Hawaii 96801

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Mr. Yee:

Thank you for your letter dated July 14, 2003 providing comments on the subject proposal. We wish to provide the following information in response to your comments.

We acknowledge the area is located within the critical wastewater disposal area as determined by the Maui County Wastewater Advisory Committee. We confirm the project does not involve wastewater improvements and no new cesspools will be developed in the project area.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Mich Hirano", with a long horizontal stroke extending to the right.

Mich Hirano, AICP
Planner

MH:yp
Enclosure

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management
com\dpwhana\fwastewater.res

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

JUL 25 2003

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD / CWB

07093PKP.03

July 23, 2003

Mr. Dean K. Frampton
Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

**Subject: Hana Landfill Land Acquisition
Hana, Maui, Hawaii**

The Department of Health, Clean Water Branch (CWB) has reviewed the subject document and offers the following comments:

1. The Army Corps of Engineers should be contacted at (808) 438-9258 to identify whether a Federal license or permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."
2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:
 - a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).
 - b. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the commencement of the construction activities.
 - c. Discharge of treated effluent from leaking underground storage tank remedial activities.
 - d. Discharge of once through cooling water less than one (1) million gallons per day.

Mr. Dean K. Frampton
July 23, 2003
Page 2

- e. Discharge of hydrotesting water.
- f. Discharge of construction dewatering effluent.
- g. Discharge of treated effluent from petroleum bulk stations and terminals.
- h. Discharge of treated effluent from well drilling activities.
- i. Discharges of treated effluent from recycled water distribution systems.
- j. Discharges of storm water from a small municipal separate storm sewer system.
- k. Discharge of circulation water from decorative ponds or tanks.

The CWB requires that a Notice of Intent (NOI) to be covered by a NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.state.hi.us/doh/eh/cwb/forms/genl-index.html>.

- 3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible (i.e. discharges into Class 1 or Class AA waters). An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at <http://www.state.hi.us/doh/eh/cwb/forms/indiv-index.html>.
- 4. Hawaii Administrative Rules, Section 11-55-38, also requires the owner to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD) or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. Please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

If you have any questions, please contact the CWB at (808) 586-4309.

Sincerely,


DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:cu



March 3, 2004

Denis R. Lau, P.E., Chief
Clean Water Branch
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Mr. Lau:

Thank you for your letter dated July 23, 2003 providing comments on the subject proposal. We wish to provide the following information in response to your comments in the same order as presented in your letter.

Response to Item No. 1

The Department of Army Corps of Engineers has been contacted as part of the early consultation process to identify whether a Federal license or permit will be required for the project. Further coordination with the Army Corps of Engineers will be carried out to determine if there are applicable permitting requirements.

Response to Item No. 2

In accordance with Title 40, Code of Federal Regulations (CFR), landfill operations must not cause a discharge of pollutants to waters of the United States. A runoff storage pond is proposed to contain runoff from the active landfill area. Coordination with the Clean Water Branch will be carried out to determine if a National Pollutant Discharge Elimination System permit will be required for the construction of the proposed improvements prior to the commencement of the construction activities. We also confirm that a Notice of Intent (NOI) to be covered by the NPDES general permit will be submitted to the Clean Water Branch as per the requirements, if a NPDES general permit is required.

Denis R. Lau, P.E., Chief

March 3, 2004

Page 2

Response to Item No. 3

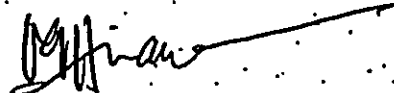
We acknowledge and confirm that if an individual NPDES permit is required for the proposed activities, an application for the permit will be submitted at least 180 days before the commencement of the respective activities.

Response to Item No. 4:

Coordination with the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD) has been carried out as part of the early consultation process. An archaeological assessment has been carried out for the proposed project. This report has been submitted to SHPD for review and approval. Findings of the archaeological assessment and report as well as SHPD's review will be incorporated in the Draft environmental assessment.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,



Mich Hirano, AICP
Planner

MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management

com/hana/cleanwater.res

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

JUL 29 2003

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
File:

July 24, 2003

03-799A CAB

Mr. Dean K. Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

SUBJECT: Request for Early Consultation, County of Maui's Hana Landfill
Land Acquisition, Hana, Maui - TMK: 1-3-006:007

This letter is to transmit the following comments on the subject document:

Control of Fugitive Dust:

There is a significant potential for fugitive dust emissions during all phases of construction. Proposed construction activities will occur in proximity to existing residences, public areas and major thoroughfares, thereby exacerbating potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. Implementation of adequate dust control measures during all phases of development and construction activities is warranted.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust.

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

- a) Plan the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
- b) Provide an adequate water source at the site prior to start-up of construction activities;

Mr. Dean K. Frampton
July 24, 2003
Page 2

- c) Landscape and provide rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d) Minimize dust from shoulders and access roads;
- e) Provide adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f) Control dust from debris being hauled away from the project site.

If you have any questions, please contact Mr. Barry Ching of my staff at 586-4200.

Sincerely,



WILFRED K. NAGAMINE
Manager, Clean Air Branch

BC:jhm



March 3, 2004

Wilfred K. Nagamine, Manager
Clean Air Branch
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Mr. Nagamine:

Thank you for your letter dated July 24, 2003 providing comments on the subject proposal. We wish to provide the following information in response to your comments.

1. **Response to Comments on Fugitive Dust**

a. **Dust Control During Operations**

The operations plan for Hana Landfill provides dust control management procedures. During dry periods, water trucks from the County highway division are used to control the dust on the access roads and other areas of the landfill operations as necessary. Due to the amount of rainfall received and the type of cover material used at the site, dust does not tend to be a problem.

b. **Dust Control During Construction Activities**

We confirm that construction activities will be carried out in compliance with the provisions of Hawaii Administrative Rules, Section 11-60.1-33 on Fugitive Dust. Best management practices will be carried out to control fugitive dust during construction and will include, but not be limited to the measures identified in your letter.

Wilfred K. Nagamine, Manager
March 3, 2004
Page 2

Again, thank you for your comments and participation in the early review process.

Very truly yours,



Mich Hirano; AICP
Planner

MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management
comthana/cleanair/res

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793-2198

JUN 30 2003

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH
LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

June 26, 2003

Mr. Dean K. Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: Request for Early Consultation, Hana Landfill
TMK: (2) 1-3-006:007

Thank you for the opportunity to participate in the early consultation process for the environmental assessment. The following comments are offered:

1. The approval of the Solid and Hazardous Waste Branch of the Department of Health is required.
2. It is recommended that a mosquito control plan be developed for the landfill.

Should you have any questions, please call me at 984-8230.

Sincerely,

A handwritten signature in black ink, appearing to be "H. Matsubayashi", written over a circular stamp.

Herbert S. Matsubayashi
District Environmental Health Program Chief



March 3, 2004

Herbert S. Matsubayashi, Chief
District Environmental Health Program
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Mr. Matsubayashi:

Thank you for your letter dated June 26, 2003 providing comments on the subject proposal. We wish to provide the following information in response to your comments in the same order as presented in your letter.

Response to Item No. 1

We acknowledge that approval of the Solid and Hazardous Waste Branch of the Department of Health is required for the subject action. Coordination with the Hazardous Waste Branch has been carried out in this regard.

Response to Item No. 2

We confirm that a mosquito control plan will be developed for the landfill operations.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Mich Hirano, AICP
Planner

MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management
com/hana/doh.res

ALAN M. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955



COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration

TRACY TAKAMINE, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

JOHN D. HARDER
Solid Waste Division

August 6, 2003

Mr. Dean Frampton, Planner
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Frampton:

SUBJECT: EARLY CONSULTATION
COUNTY OF MAUI HANA LANDFILL LAND ACQUISITION
TMK: (2)1-3-006:007 (POR)

We reviewed the subject early consultation and have the following comments:

1. If a subdivision is required, the project shall comply with the provisions of Title 18 "Subdivisions" of the Maui County Code.
2. The drainage system design shall comply with the provisions of the drainage rules and shall create no additional adverse effects to adjacent and downstream properties.
3. The grading for the project shall comply with the provisions of the grading ordinance. Best management practices shall be implemented to the maximum extent practicable to prevent pollutants including dust and sediment from discharging off the project site.

If you have any questions regarding this letter, please call Milton Arakawa at 270-7845.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Gilbert S. Coloma-Agaran".
For Gilbert S. Coloma-Agaran
Director



March 3, 2004

Gilbert Coloma-Agaran, Director
County of Maui
Department of Public Works and
Environmental Management
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Mr. Coloma-Agaran:

Thank you for your letter dated August 6, 2003 providing comments on the subject proposal. We wish to provide the following information in response to your comments.

1. We confirm the subdivision of the landfill expansion area will be carried out in compliance with provisions of Maui County Code, Title 18 Subdivisions.
2. We confirm the drainage system design for the detention basin will comply with the provisions of the department's drainage rules and will not create additional adverse effects to adjacent and downstream properties.
3. We confirm the grading for the project will be carried out in compliance with the County grading ordinance and best management practices will be implemented to the maximum extent practicable, to prevent pollutants including dust and sediment from discharging off the project site.

Again, thank you for your comments and participation in the early consultation review process.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Mich Hirano", is written over a dotted line.

Mich Hirano, AICP
Planner

MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management

comthanai@dpwem.mus

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • planning@mhincollins.com

environment
planning
government



ALAN M. ARAKAWA
MAYOR

OUR REFERENCE
YOUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

AUG 06 2003



THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUHAUPIO R. AKANA
DEPUTY CHIEF OF POLICE

July 29, 2003

Mr. Mitch Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Hirano:

SUBJECT: Request for Early Consultation, County of Maui's Hana Landfill Land Acquisition, Hana, Maui - TMK 1-3-006:007 (por.)

Thank you for your letter of June 20, 2003, requesting comments on the above subject.

We have reviewed the proposed summary and have enclosed our comments and recommendations. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

Assistant Chief Sydney Kikuchi
for: Thomas M. Phillips
Chief of Police

Enclosure

c: Michael W. Foley, Dept. of Planning

COPY

TO: THOMAS PHILLIPS, CHIEF, MAUI POLICE DEPARTMENT
FROM: JOHN AKANA, POLICE OFFICER, DISTRICT III - HANA
VIA: CHANNELS *07/28/23*
SUBJECT: REQUEST FOR EARLY CONSULTATION, COUNTY OF MAUI'S
HANA LANDFILL LAND ACQUISITION

Sir, after reviewing the letter to you from Mr. Dean FRAMPTON regrading the Hana Landfill I contacted James PERRY of Hana Public Works for any comments he might have. After reviewing the letter he related that he will make his suggestion directly to the planner. When reviewing the attached map he and I both noticed that the planner had highlighted the wrong area/location of where the landfill is currently located. After talking with residents in the Wakiu area who live next to the current sight, I had no negative comments or suggestions. As mentioned in the letter the current location of the household waste site is already encroached on the parcel currently sought for acquisition. I recommend approval and hope the County can acquire additional parcels in the future. The benefit to having the landfill in this particular area is the control of access (entry/exit). Also there is virtually no impact on any residential area.

Respectfully submitted,

John AKANA
07/11/03

Recommend Approval
Sgt. [Signature] 0825
07/28/23 1501hr.

CONCUR WITH OFC. AKANA.
RECOMMEND APPROVAL

[Signature] #8862
07/23/23

7.28.23
Aut: [Signature]
James
Resque
to Muelky
Hiregg



March 3, 2004

Thomas M. Phillips, Chief of Police
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: County of Maui Hana Landfill Land Acquisition
TMK 1-3-006: Por. 007

Dear Chief Phillips:

Thank you for your letter dated July 29, 2003 providing Officer Akana's comments on the subject proposal. We wish to provide the following information in response to Officer Akana's comments.

The location of the subject property in the context of the Regional Location Map will be adjusted in the Draft Environmental Assessment document to more accurately reflect the current location of the landfill area. We acknowledge and concur that the benefits of the landfill location is the control of access to the site and buffer area between the landfill operations and residential area.

Again, thank you for your department's comments and participation in the early consultation process.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Mich Hirano", is written over a horizontal line.

Mich Hirano, AICP
Planner

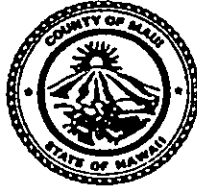
MH:yp

cc: John Harder, Solid Waste Division, County of Maui Department of Public Works and
Environmental Management
com/hanalt/vmpd.res

305 High Street, Suite 104 - Wailuku, Hawaii 96793 - ph: (808)244-2015 - fax: (808)244-8729 - planning@mhinconline.com

environment
planning
government

ALAN M. ARAKAWA
Mayor



JUN 30 2003

GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

June 25, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

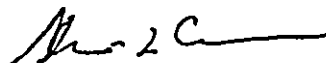
Dear Mr. Frampton:

SUBJECT: COUNTY OF MAUI'S HANA LANDFILL LAND ACQUISITION
HANA, MAUI, TMK: 1-3-006:007 (por.)

We have reviewed the proposed action for the subject project and have no comments to offer at this time.

Thank you for the opportunity to review and comment. Should there be any questions, please contact Mr. Patrick Matsui, Chief of Parks Planning and Development, at 270-7387.

Sincerely,


GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning and Development



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

JUL 02 2003

ALAN M. ARAKAWA
Mayor

ALICE L. LEE
Director

HERMAN T. ANDAYA
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165

June 27, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

SUBJECT: EARLY CONSULTATION FOR COUNTY OF MAUI'S HANA
LANDFILL LAND ACQUISITION, HANA, MAUI
TMK 1-3-006:007 (POR)

We have reviewed your June 20, 2003 letter and enclosures
and wish to inform you that we do not have any comments to offer.

Thank you for the opportunity to comment.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Alice L. Lee", is written over the typed name.

ALICE L. LEE
Director

ETO:hs

c: Housing Administrator

**IX. AGENCIES
CONSULTED DURING THE
30-DAY COMMENT
PERIOD OF THE DRAFT
ENVIRONMENTAL
ASSESSMENT; LETTERS
RECEIVED AND
RESPONSES TO
SUBSTANTIVE
COMMENTS**

IX. AGENCIES CONTACTED DURING THE 30-DAY COMMENT PERIOD OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were sent copies of Draft Environmental Assessment for review and comment during the 30-day comment period which ended on December 24, 2004. Letters received and responses to substantive comments are included in this section.

- | | |
|---|--|
| 1. Neal Fujiwara, Soil
Conservationist
Natural Resources Conservation
Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawai'i 96793-2100 | 6. Peter Young, Chairperson
State of Hawai'i
Department of Land and Natural
Resources
P. O. Box 621
Honolulu, Hawai'i 96807 |
| 2. William Lennan
Department of the Army
Regulatory Branch
U.S. Army Engineer District, Hnl.
Building 230
Fort Shafter, Hawai'i 96858-5440 | 7. Holly McEldowney, Acting Administrator
State of Hawai'i
Department of Land and Natural
Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai'i 96707 |
| 3. Robert P. Smith
Pacific Islands Manager
U. S. Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawai'i 96850 | 8. Davis K. Yogi, Airports Administrator
State of Hawai'i - Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawai'i 96819 |
| 4. Chiyome L. Fukino, M.D., Director
State of Hawai'i
Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96801 | 9. Fred Cajigal, Maui District Engineer
State of Hawai'i
Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawai'i 96732 |
| 5. Herbert Matsubayashi
District Environmental Health
Program Chief
State of Hawai'i
Department of Health
54 High Street
Wailuku, Hawai'i 96793 | 10. Colin Kippen, Deputy Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai'i 96813 |

11. Carl Kaupalolo, Chief
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawai'i 96732
12. Alice Lee, Director
Department of Housing and
Human Concerns
200 South High Street
Wailuku, Hawai'i 96793
13. Michael Foley, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawai'i 96793
14. Glenn Correa, Director
County of Maui
Department of Parks and
Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawai'i 96793
15. Tom Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawai'i 96793
16. Gilbert Coloma-Agaran, Director
County of Maui
Department of Public Works
and Environmental Management
200 South High Street
Wailuku, Hawai'i 96793
17. George Tengan, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawai'i 96793
18. Maui Electric Company, Inc.
P.O. Box 398
Kahului, Hawai'i 96733
19. Hana Community Association
P.O. Box 202
Hana, Hawai'i 96713
20. Dan Omer
Hana Ranch Partners
P.O. Box 519
Hana, Hawai'i 96713

APR 01 2004

United States Department of Agriculture

USDA

 Natural Resources
Conservation Service

Our People...Our Islands...In Harmony
210 Imi Kala Street, Suite #209, Wailuku, HI 96793-2100

Date: March 31, 2004

Mr. Mitch Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

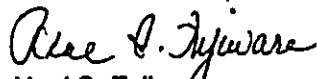
Dear Mr. Hirano,

SUBJECT: County of Maui's Hana Landfill Land Acquisition

We have no comment on the subject Draft Environmental Assessment.

Thank you for the opportunity to comment.

Sincerely,


Neal S. Fujiwara
District Conservationist



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

MAR 31 2004

REPLY TO
ATTENTION OF

March 30, 2004

Regulatory Branch

Mr. Michael Munekiyo
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

This letter responds to your request for comments on the draft Environmental Assessment (DEA) for the County of Maui's Hana Landfill Land Acquisition dated March 26, 2004. Based on the information provided in the DEA I have determined there are no waters of the U.S., including wetlands at the site and therefore a Department of the Army (DA) permit will not be required for this project. This does not relieve the applicant from obtaining other authorizations from the State of Hawaii or the County of Maui.

If you have any questions concerning this determination, please contact Mr. William Lennan of my staff at 808-438-6986 or FAX 808-438-4060, and reference File No. 200300483.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

APR 08 2004

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
BRUCE Y. MATSUI
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

AIR-P
04.0069

April 5, 2004

Mr. Michael Munekiyo
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

Subject: County of Maui's Hana Landfill Land Acquisition
Draft Environmental Assessment

We have reviewed the subject document and find that the proposed project will not have any significant impact to Hana Airport.

Thank you for giving us the opportunity to review and comment on the Draft Environmental Assessment. If you should have any questions, please contact Mr. Stephen Takashima, Acting Planning Head, at (808) 838-8810.

Sincerely,

A handwritten signature in black ink, appearing to read "Davis K. Yogi".

DAVIS K. YOGI
Airports Administrator

LINDA LINGLE
GOVERNOR OF HAWAII



APR 26 2004

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

April 22, 2004

Mr. John Harder
County of Maui – Department of Public Works and Environmental Management
200 South High Street
Wailuku, Hawaii 96793

Mr. Michael T. Munekiyo, A.I.C.P.
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

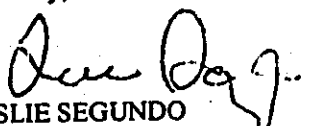
Dear Messrs. Harder and Munekiyo:

The Office of Environmental Quality Control has reviewed the March 2004, draft environmental assessment for the Hana Landfill Land Acquisition by the County of Maui, Tax Map Key No. (2) 1-3-6: 7 (por.) and 12 (por.), in the judicial district of Hana. We offer the following comments for your consideration and response.

INDIRECT AND CUMULATIVE IMPACTS: Please consult with the Planning Department and discuss in the environmental assessment the planning horizon for landfill expansion with respect to this acquisition of land. Please discuss if this is consonant with the projected growth over the planning period for the Hana region being served by this landfill.

Thank you for the opportunity to comment. If there are any questions, please call me at (808) 586-4185.

Sincerely,


LESLIE SEGUNDO
Environmental Health Specialist

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 26, 2004

APR 28 2004

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

COMALANDFILL.RCM

LD-NAV

Munekiyo and Hiraga, Inc.
Mich Hirano, AICP
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

SUBJECT: Draft Environmental Assessment for County of Maui Hana Landfill
Acquisition TMK: (2) 1-3-006: 007 and 012

Thank you for the opportunity to review and comment on the subject matter.

The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of the Draft Environmental Assessment to the following Department of Land and Natural Resources' Division for their and comment:

- Division of Forestry and Wildlife
- Na Ala Hele Trails
- Division of State Parks
- Engineering Division
- Commission on Water Resource Management
- Office of Conservation and Coastal Lands
- Land-Maui District Land Office
- Land-Planning and Development
- Land-Project Development Specialist

Enclosed please find a copy of the Commission on Water Resource Management, Engineering Division and Land Division Maui District Land Office comment.

The Department of Land and Natural Resources has no other comment to offer at this time..

If you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,

DIERDRE S. MAMIYA
Administrator

C: MDLO

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

RECEIVED
LAND DIVISION
2004 APR 20 A 4 26
FETER T. YOUNG
CHAIRPERSON
EDITH J. CHING
CLAYTON W. DELA CRUZ
JAMES A. FRAZIER
CHIYOME L. FUKINO, M.D.
STEVEN A. WHALEN
ERNEST Y.W. LAU
DEPUTY DIRECTOR
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

April 19, 2004

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: Ernest Y.W. Lau, Deputy Director *EL*
Commission on Water Resource Management (CWRM)

SUBJECT: Hana Landfill Land Acquisition

FILE NO.: COMHANALANDFILL.CMT

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- ☐ We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- ☐ We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- ☐ We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- ☐ A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- ☐ The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- ☐ Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- ☐ We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- ☐ If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- ☐ If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- ☒ OTHER:
We recommend coordination with the Department of Health concerning potential impacts on anchialine ponds.

If there are any questions, please contact Charley Ice at 587-0251.

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED

04 APR 6 10:15

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

April 2, 2004

LD/NAV
Ref.: COMHANALANDFILL.CMT

L-1772
Suspense Date: 4/13/04

MEMORANDUM:

TO: Division of Aquatic Resources
*XXX Division of Forestry & Wildlife
*XXX Division of State Parks
*XXX Na Ala Hele Trails
Division of Boating and Ocean Recreation
*XXX Commission on Water Resource Management
*XXX Office of Conservation and Coastal Lands
*XXX Engineering Division
XXX Land-Maui District Land Office (DD)
*XXX Land-Planning and Development
*XXX Land-Project Development Specialist

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: County of Maui's Hana Landfill Land Acquisition
Applicant: County of Maui
Consultant: Munekiyo & Hiraga, Inc. (808-244-2015)

Please review the document pertaining to the subject matter and submit your comment (if any) on Division letterhead signed and dated by the suspense date.

*NOTE: One copy of the document is available for your review in the Land Division Office, Room 220.

Should you need more time to review the document, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

() We have no comments.

(/) Comments attached.

Signed: *W. P. Mamiya*

Date: 4/19/04

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED
LAND DIVISION

2004 APR 12 P 3 22



STATE OF HAWAII
DEPT. OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
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COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

April 2, 2004 4/6

LD/NAV

Ref.: COMHANALANDFILL.CMT

L-1772

Suspense Date: 4/13/04

MEMORANDUM:

TO: Division of Aquatic Resources
*XXX Division of Forestry & Wildlife
*XXX Division of State Parks
*XXX Na Ala Hele Trails
Division of Boating and Ocean Recreation
*XXX Commission on Water Resource Management
*XXX Office of Conservation and Coastal Lands
*XXX Engineering Division
XXX Land-Maui District Land Office (DD)
*XXX Land-Planning and Development
*XXX Land-Project Development Specialist

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: County of Maui's Hana Landfill Land Acquisition
Applicant: County of Maui
Consultant: Munekiyo & Hiraga, Inc. (808-244-2015)

Please review the document pertaining to the subject matter and submit your comment (if any) on Division letterhead signed and dated by the suspense date.

*NOTE: One copy of the document is available for your review in the Land Division Office, Room 220.

Should you need more time to review the document, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

() We have no comments.

(✓) Comments attached.

Signed:

Date:

**DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION**

LA/NAV

Ref.: COMHANALANDFILL.CMT

COMMENTS

- (X) We confirm that landfill operations within the project site, according to the Flood Insurance Rate Map (FIRM), are located in Flood Zone A4.
- () Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone ____.
- () Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ____.
- (X) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- () Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
- () Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
- (X) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- () Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.
- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.
- () Additional Comments: _____
- () Other: _____

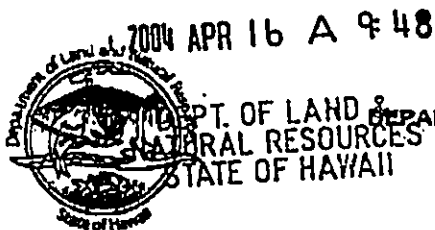
Should you have any questions, please call Mr. Andrew Monden of the Planning Branch at 587-0229.

Signed: Eric T. Hirano
for ERIC T. HIRANO, CHIEF ENGINEER

Date: 4/12/04

RECEIVED
LAND DIVISION

LINJA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

54 High Street, Room 101
Honolulu, Hawaii 96813
PHONE: (808) 984-8103
FAX: (808) 984-8111

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

April 15, 2004

Ref: COMHANALANDFILL.CMT

MEMORANDUM

TO: Dierdre S. Mamiya, Administrator
Land Division

FROM: Jason K. Koga, District Land Agent
Maui District Land Office *J. Koga*

SUBJECT: County of Maui's Hana Landfill Land Acquisition, TMK: (2) 1-3-006:007
and 12

We have the following comments on the Draft Environmental Assessment (EA)
for the subject project:

1. A portion of TMK: (2) 1-3-006:012 (approximately 29 acres) was set aside by Governor's Executive Order No. 3304 to the County of Maui for the Hana garbage dump site. The Executive Order is dated November 16, 1985. Approximately 5 acres remain as a 250 foot buffer along the shoreline.
2. I am confused by Paragraph C.1. on Page 7 and 8 of the Draft EA. In one sense it appears to address the shoreline buffer, but then it seems to refer to the expanded buffer area to be acquired. Our understanding is that the shoreline buffer will not be affected by the proposed action.
3. Paragraph A.1. on Page 11 states that there are two leases on TMK: (2) 1-3-006:007, one to Lloyd Abreu and one to Hazel Oliveira. There is actually only one lease for pasture purposes on the parcel to Lloyd Abreu.
4. Lloyd Abreu apparently does not object to the proposed expansion of the Landfill and we feel it appropriate that the expansion area be withdrawn from Abreu's lease prior to an Executive Order setting aside said area to the County.

Dierdre S. Mamiya
April 15, 2004
Page 2

5. Although the boundary realignment of Parcel 12 will apparently only affect the portions of Parcel 7 in the Agricultural District, we recommend that the Office of Conservation and Coastal Lands be consulted on whether the boundary realignment still would require a Conservation District Use Permit, based on the fact that a portion of Parcel 12 is already located within the Conservation District.
6. I was not able to find a metes and bounds description for "LEASE AREA 1" as depicted on Newcomer-Lee Land Surveyors revised plat dated 1/13/04, which appears to be a major part of the proposed expansion area.

Thank you for the opportunity to review and comment on the Draft EA. We have no further comments at this time.

c: N. Vaccaro
District Files
OCCL

CHARMAINE TAVARES
Mayor
MILTON M. ARAKAWA, A.I.C.P.
Director
MICHAEL M. MIYAMOTO
Deputy Director



**COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration
DAVID TAYLOR, P.E.
Wastewater Reclamation Division
CARY YAMASHITA, P.E.
Engineering Division
TRACY N. TAKAMINE, P.E.
Solid Waste Division
BRIAN HASHIRO, P.E.
Highways Division

May 4, 2007

Russell Tsuji, Administrator
State of Hawai'i
Department of Land and Natural Resource
P. O. Box 621
Honolulu, Hawai'i 96809

**SUBJECT: COUNTY OF MAUI'S HANA LANDFILL LAND ACQUISITION DRAFT
ENVIRONMENTAL ASSESSMENT (EA)**

Dear Mr. Tsuji:

Thank you for your letter dated April 26, 2004, providing the consolidated comments from the Department of Land and Natural Resources on the subject project. The following information is provided in response to your comments.

1. Response to Commission On Water Resource Management's Comments

The proposed action includes expansion of the landfill boundaries to incorporate environmental monitoring stations (methane gas probes and groundwater monitoring wells) and a drainage detention basin to capture stormwater runoff from the landfill operations. The Department of Public Works and Environmental Management carries out semi-annual tests on the groundwater monitoring wells. These measures are taken to protect water recharge areas and the underlying aquifer from potential adverse impacts from landfill operations.

The Draft EA was submitted to the Department of Health for review and comment.

2. Response to Engineering Division's Comments

The proposed project will be designed to conform with local flood ordinances pursuant to Maui County Code, Chapter 19.62, Flood Hazard Areas.

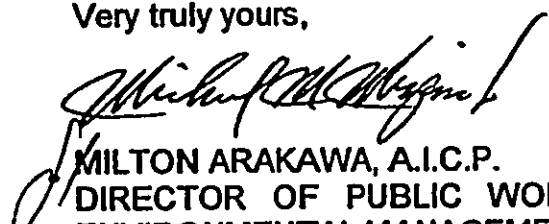
3. Response to Maui District Land Agent's Comments

- a. It is noted that approximately 29 acres of TMK (2) 1-3-006: 012 (Parcel 12) was set aside by Executive Order for the Hana Landfill site and the remaining portion of Parcel 12 includes an approximate 250 to 300-foot strip of land between the eastern boundary of the landfill site and the coastline. This strip of land is not part of the Hana Landfill, and the appropriate maps and description of the Hana Landfill site in the EA document will be revised accordingly.
- b. The District Land Agent's comments are noted regarding the buffer areas and will be clarified in the EA document. The 250 to 300-foot strip of land between the landfill and coastline, referred to as a shoreline buffer, will not be affected by the proposed action. This area is outside of the Hana Landfill site.
- c. Reference to the leaseholder of a portion of property identified by TMK (2) 1-3-006:007, will be corrected in the EA document.
- d. It is noted that the leaseholder, Loyd Abreu, does not object to the proposed expansion of the landfill. The Department of Public Works and Environmental Managements also notes and appreciates that the Department of Land and Natural Resources will withdraw the expansion area from Mr. Abreu's lease prior to an Executive Order setting aside the expansion area to the County.
- e. The Land Use Commission was requested to provide a District Boundary Interpretation in regards to the Agricultural/Conservation district boundary. This interpretation was used to modify the expansion area to exclude lands designated in the Conservation district. The Land Use Commission District Boundary Interpretation is enclosed herein as Exhibit "A" for your reference and file.
- f. The metes and bounds description for "LEASE AREA 1" will be included in the EA document.

Russell Tsuji, Administrator
May 4, 2007
Page 3

Thank you again for your comments and review of the draft EA document.

Very truly yours,


MILTON ARAKAWA, A.I.C.P.
DIRECTOR OF PUBLIC WORKS AND
ENVIRONMENTAL MANAGEMENT

MA
Enclosure

cc: Elaine Baker, County of Maui, Department of Public Works and Environmental
Management (w/enclosure)
Mich Hirano, Munekiyo & Hiraga, Inc. (w/out enclosure)

F:\DATA\COM\DPWHansLFVResponse Letters to Agencies from DPWEM\Letter to DLNR Russell Tsuji.wpd

LINDA LINGLE
GOVERNOR



DEC 05 2003

ANTHONY J.H. CHING
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, Hawaii 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

December 4, 2003

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: Boundary Interpretation No. 03-35
Tax Map Key No: 1-3-06: por. 7 and 12
Kawaipapa and Wakiu, Hana, Maui, Hawaii

Pursuant to your letter dated October 8, 2003, requesting a boundary interpretation for the subject parcels, please be advised that we have determined an approximate location of the State Land Use (SLU) Agricultural/Conservation District boundary.

Our determination is based on review of the Commission's records and official maps currently on file at our office and the map that you provided. For your information, the Agricultural/Conservation District boundary was established during the 1969 Five-Year Boundary Review.

A copy of your map with an approximate location of the SLU Agricultural/Conservation District boundary delineated is enclosed for your reference.

EXHIBIT **"A"**

Mr. Mich Hirano
December 4, 2003
Page 2

Should you require clarification or further assistance, please feel free to call Fred Talon or Bert Saruwatari of my staff at 587-3822.

Sincerely,


ANTHONY J. H. CHING
Executive Officer

Enclosure: Boundary Interpretation Map dated December 4, 2003

c: Peter Young, BLNR Chairperson (w/enclosure)
Attn: Dierdre F. Mamiya, Land Division
Michael Foley, Planning Director, County of Maui Planning Department (w/enclosure)
Melvin Kanaha, Real Property Tax Supervisor, County of Maui (w/enclosure)
Attn: Dawn Mattney, Mapping Section
Elaine Baker, County of Maui Department of Public Works and Environmental
Management, Solid Waste Division (w/enclosure)

393.00 ACRES
(C.S.F. NO. 17,643)

LOT A-1-B
(C.S.F. NO. 20,245)

LOT A-2
(C.S.F. NO. 20,178)

5,846.57 FT. NORTH
1,512.56 FT. WEST
REF. TO "KAUIKI" Δ

CONSERVATION

LEASE AREA 2+
(6.342 ACRES)

EXISTING EASEMENT
(FOR ROADWAY PURPOSES)

LOT A-1-A
393 ACRES
(C.S.F. NO. 17,643)

AGRICULTURAL

LEASE AREA 1
(45.140 ACRES)

LOT B
HANA GARBAGE DUMP SITE
29.000 ACRES
(C.S.F. NO. 20,247)

APPROXIMATE STATE LAND USE
AGRICULTURAL / CONSERVATION
DISTRICT BOUNDARY

Grant

The boundary as located, named and delineated is hereby certified as the actual Land Use District Boundary adopted by the State Land Use Commission, Honolulu, Hawaii.

DEC 04 2003

Date _____

Executive Officer

Kahananui.

et al

Grant 8237 to Haiku
Fruit and Packing Co.

A circular professional seal for Bruce R. Lee, a Licensed Professional Land Surveyor. The outer ring contains the name "BRUCE R. LEE" at the top and "HAWAII, U.S.A." at the bottom, separated by two five-pointed stars. The inner circle contains the text "LICENSED PROFESSIONAL LAND SURVEYOR" and the license number "No. 5983-LS".

THIS PLAT WAS PREPARED BY ME OR
UNDER MY DIRECT SUPERVISION.

PLAT SHOWING
LEASE AREA 1 AND 2 AFFECTING LOT A-1-A
OF THE GOVERNMENT LANDS OF KAWAIPAPA AND WAKIU
IN FAVOR OF LOT B HANA GARBAGE DUMP SITE
SITUATED AT KAWAIPAPA & WAKIU, HANA, MAUI, HAWAII

PREPARED FOR:

COUNTY OF MAUI
SOLID WASTE DIVISION
200 S. HIGH STREET, 4TH FLOOR
WAILUKU, HI 96793

PREPARED BY:

NEWCOMER - LEE
LAND SURVEYORS, INC.
1498 LOWER MAIN STREET, SUITE D.
WAILUKU, MAUI HAWAII 96793

T.M.K.:(2) 1-3-006: POR. 007

SCALE: 1 INCH = 500 FEET

DATE: MARCH 24, 2003

SHT. 2 OF 2 SHTS.

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

MAY 13 2004

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 10, 2004

Mr. Mitch Hirano
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2004.1449
DOC NO: 0405CD04

Dear Mr. Hirano,

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Draft Environmental Assessment (EA) for the Proposed County of Maui's Hana Landfill Land Acquisition
Kawaipapa Ahupua'a, Hana District, Island of Maui
TMK: (2) 1-3-006:012 and por. of 007**

Thank you for the opportunity to review and comment on the Draft EA for the proposed County of Maui's Hana Landfill Land Acquisition, which was received by our staff on March 20, 2004.

Based on the submitted Draft EA, we understand the County of Maui, Department of Public Works and Environmental Management (DPWEM), Solid Waste Division, is planning to expand the limits of the Hana Landfill Facility. The DPWEM is in the process of acquiring adjacent lands from the State of Hawaii to incorporate an area of landfill encroachment. The DPWEM is seeking to acquire a portion of parcel 007 to include a buffer zone surrounding the landfill area.

In 2003 Xamanek Researches Inc. conducted an archaeological assessment of the subject properties. We have reviewed and accepted the report documenting the negative findings (*An Archaeological Assessment of Portions of the Hana Landfill and Adjacent State Land in Kawaipapa Ahupua'a, Hana District, Island of Maui* [TMK: 1-3-06: Parcel 12 and Portion of Parcel 7] Fredericksen 2003) (SHPD DOC NO.: 0310MK29/LOG NO.: 2003.2184).

Given the above information, we believe there will be "no historic properties affected" by the proposed undertaking. However, we request the opportunity to review future permitted actions involving the County of Maui landfill expansion as other portions of parcels 007 and 012 are currently unaltered. Expansion into these areas may warrant additional work, including an archaeological inventory survey.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

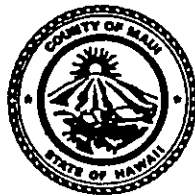
Aloha,


P. Holly McEldowney, Administrator
State Historic Preservation Division

CD:jen

c: Michael Foley, Director, Dept of Planning, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793

CHARMAINE TAVARES
Mayor
MILTON M. ARAKAWA, A.I.C.P.
Director
MICHAEL M. MIYAMOTO
Deputy Director



**COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration
DAVID TAYLOR, P.E.
Wastewater Reclamation Division
CARY YAMASHITA, P.E.
Engineering Division
TRACY N. TAKAMINE, P.E.
Solid Waste Division
BRIAN HASHIRO, P.E.
Highways Division

May 4, 2007

Leslie Segundo, Environmental Health Specialist
State of Hawai'i
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

**SUBJECT: COUNTY OF MAUI'S HANA LANDFILL LAND ACQUISITION DRAFT
ENVIRONMENTAL ASSESSMENT (EA)**

Dear Mr. Segundo:

Thank you for your letter dated April 22, 2004, providing comments on the subject project. The following information is provided in response to your comments.

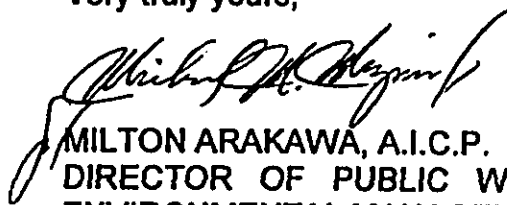
1. Response to Comment on Indirect and Cumulative Impacts

R.M. Towill Corporation, prepared a report entitled, Public Facilities Assessment Update, County of Maui, for the Department of Planning in July 2002. Based on information in this assessment, the Hana Landfill has an estimated capacity of 290,400 cubic yards and an operational expectancy to the year 2050. The planning horizon for the landfill expansion is consonant with the projected growth for the Hana region.

Leslie Segundo, Environmental Health Specialist
May 4, 2007
Page 2

Thank you again for your comments on the draft EA.

Very truly yours,


MILTON ARAKAWA, A.I.C.P.
DIRECTOR OF PUBLIC WORKS AND
ENVIRONMENTAL MANAGEMENT

MA

cc: Elaine Baker, County of Maui, Department of Public Works and Environmental
Management

Mich Hirano, Munekiyo & Hiraga, Inc.

F:\DATA\COMDPWHanaLFR\response Letters to Agencies from DPWEM\Letter to OEQC.wpd

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2102

April 13, 2004

APR 16 2004

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Mr. Hirano:

Subject: **County of Maui's Hana Landfill Land Acquisition**
TMK: (2) 1-3-006:007

Thank you for the opportunity to comment on the Hana Landfill Land Acquisition Draft Environmental Assessment. We have no comments to offer at this time.

Should you have any questions, please call me at 984-8230.

Sincerely,

A handwritten signature in black ink, enclosed in a hand-drawn oval. The signature appears to be "H. Matsubayashi".

Herbert S. Matsubayashi
District Environmental Health Program Chief

PHONE (808) 594-1888

APR 16 2004

FAX (808) 594-1885



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD04-1348

April 14, 2004

Michi Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Subject: Draft Environmental Assessment for the County of Maui's Hana Landfill, Hana, Maui, TMK: (2): 1-3-006:12 (existing parcel); and 7 (current area of encroachment and proposed parcel for expanding the landfill)

Dear Mr. Hirano:

Thank for your letter dated March 26, 2004 regarding the Draft Environmental Assessment (EA) for the County of Maui's Hana Landfill, Hana, Maui, TMK: (2): 1-3-006:12 (existing parcel); and 7 (current area of encroachment and proposed parcel for expanding the landfill). Your letter requests that the Office of Hawaiian Affairs (OHA) review and comment on the proposed project.

Archaeological Survey

Appendix B, the Archaeological Assessment Report of the Draft EA for the proposed project notes,

There were no significant material cultural remains noted during the inspection of the very inspection of the very rocky surface of the Hana Landfill parcel. In addition, there were no significant above ground structural remains noted in the areas adjacent to the project. Given the rough surrounding a a terrain, it does not appear likely that the immediate study area was substantially utilized by precontact Hawaiians or during the post-contact sugar and ranch areas. In addition, the level of previous disturbance has likely eliminated any evidence of former land use on the project area.

Given the extensive grading and grubbing that has already occurred on the impacted portion of the site (area of landfill encroachment), without revealing

any significant burials or archaeological remains, it doesn't appear necessary to trigger the protections of Hawaii Revised Statutes (HRS), §6E-43.6 and Hawaii Administrative Rules (HAR), Title 13, Subtitle 13, Chapter 300, Rules of Practice and Procedure Relating to Burial Sites and Human Remains for the impacted area of encroachment. However, if any significant cultural deposits or human burials are encountered on this portion of site¹, work will cease in this particular area and the State Historic Preservation Division will be contacted.

It is unclear from the Draft EA (included photographs and descriptions of the proposed project area) whether or not the remainder of the project site, particularly the portions of the proposed project area that have not been impacted by the landfill encroachment (*mauka* and *makai* portions of the proposed parcel) are in compliance with HRS 6E-42 and 43 and its protections for prehistoric and burial sites. No subsurface testing was conducted for the Hana Landfill archaeological assessment study. The DEA notes that the "*makai* portion of the County of Maui parcel fronts the Hana coast" was not inspected, and it is not clear whether the non-impacted *mauka* portion of the proposed project site expansion (TMK: (2): 1-3-006:7) was inspected² in the walk-over reconnaissance that was conducted for the Draft EA's Archaeological Assessment Report. It is likely that the area of potential impact (APE) will be expanded beyond the current area of encroachment, because of operators of the current landfill were unable to contain their operations inside their designated parcel. As a consequence, archaeological inventory survey/reconnaissance work (leading to subsurface testing) would be necessary for the non-impacted, non-surveyed portion of the proposed expansion area, if the non-impacted areas are expanded into.³

Appendix B, the Archaeological Assessment Report of the Draft EA recommends that the landfill not expand into the *makai* portion of proposed parcel, particularly because "it is very likely that significant cultural resources are present" in the land fronting the ocean. OHA staff concurs with this recommendation, because of the higher probability of finding archaeological or burial sites in the area of the proposed parcel closest to the ocean.

¹OHA staff notes that during the grading, grubbing and the daily covering of waste with earthen material at the proposed site burials or buried archaeological sites could be found, particularly if the landfill expands into the coastal or mountain portions of the proposed parcel.

²The DEA, Appendix B, Archaeological Assessment Report, notes "there has been no previous archaeological inventory work carried out on this State parcel." Please clarify which portions of the proposed area of expansion (TMK: (2): 1-3-006:7) were actually surveyed and those that were not with a color code map.

³An archaeological inventory survey should be conducted in accordance with Hawaii Revised Statutes (HRS), §6E-42 for any expansion of the area of potential impact.

Cultural Impact Statement

The Draft EA must include a substantive cultural impact statement (CIS) based on consultation with the Native Hawaiian community, as required by Act 50, Session Laws of Hawaii 2000.

The CIS must identify and describe the cultural practices located with the potentially affected area (particularly since the probable area of potential impact in the long-term is larger than what is described in the Draft EA); assess the impact on these practices; examine alternatives to the proposed action; and propose mitigation measures if needed.

It is also recommended that the project developers consult with Native Hawaiian practitioners (individuals and organizations) to determine the impact of the proposed project on cultural practices. As a consequence, despite the impacts to the project site and the area, in accordance with the Chapter 343, HRS and HAR §11-200-10, Contents of an environmental assessment, "the proposing agency or approving agency shall prepare any draft or final environmental assessment of each proposed action and determine whether the anticipated effects constitute a significant effect in the context of chapter 343, HRS, and §11-200-12", the project developers should consult with the following individual with expertise on Hawaiian issues in the project area and Maui in general. The individual is as follows:

1. Terry Poaipuni, Hui No Ke Ola Pono (Center focusing on Native Hawaiian medical/health issues), (808)-248-7502

Steps should also be taken to locate other Native Hawaiians and organizations in the project vicinity.

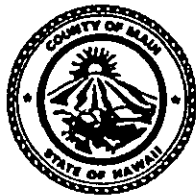
If you have questions or concerns please contact Matthew Myers, Policy Advocate at 594-1945 or matthewm@oha.org.

'O wau iho nō,



Clyde W. Nāmu'o
Administrator

CHARMAINE TAVARES
Mayor
MILTON M. ARAKAWA, A.I.C.P.
Director
MICHAEL M. MIYAMOTO
Deputy Director



**COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration
DAVID TAYLOR, P.E.
Wastewater Reclamation Division
CARY YAMASHITA, P.E.
Engineering Division
TRACY N. TAKAMINE, P.E.
Solid Waste Division
BRIAN HASHIRO, P.E.
Highways Division

May 4, 2007

Clyde W. Namu'o, Administrator
State of Hawai'i
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai'i 96813

**SUBJECT: COUNTY OF MAUI'S HANA LANDFILL LAND ACQUISITION DRAFT
ENVIRONMENTAL ASSESSMENT**

Dear Mr. Namu'o:

Thank you for your letter dated April 14, 2004, providing comments on the subject project. The following information is provided in response to your comments.

1. Response to Comments on Archaeological Survey

The area that was covered in the archaeological assessment was the active portion of the landfill operations that encroached on the adjacent State Parcel identified by TMK 1-3-006:007 (Parcel 7) covering an area of approximately 5.4 acres, the proposed site of the drainage detention basin, and the proposed white goods and car storage area on the existing landfill site identified by TMK 1-3-006: 012 (Parcel 12). See attached Assessment Area Map. The remaining portions of the expansion area in Parcel 7 were not assessed since, no landfill activities are proposed over these areas.

The portion of Parcel 12, involving an approximate 250 to 300-foot strip of land fronting the Hana coast, was not included in the Executive Order transferring management and control of the Hana Landfill site to the County of Maui. The boundaries of Hana Landfill in the EA were incorrectly represented and will be revised in the Final EA. Refer to the attached map. This area is outside of the

Clyde W. Namu'o, Administrator
May 4, 2007
Page 2

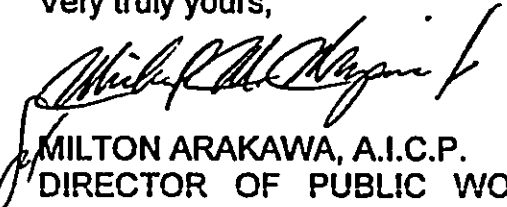
landfill boundaries and not included in the archaeological assessment. We note that the State Historic Preservation Division has reviewed the Archaeological Assessment Report and has determined that the subject project is anticipated to have "no effect" on historical properties. A copy of SHPD determination letter is attached herein as Exhibit "A".

2. Response to Comments on Cultural Impact Statement

The interviewees for the cultural impact assessment were chosen because they are individuals familiar with cultural practices of the areas affected by the undertaking. Mr. Samuel Kalalau III is a Native Hawaiian, born in Hana and his family has a long established residence in the Waikaloa area. Mr. Kalalau's great grandfather used to farm taro in the Waikaloa area. Mr. Kalalau III is Chairperson of the Maui Cultural Resources Commission, and is familiar with cultural practices in the area. The Cultural Impact Assessment is based on information provided by Mr. Kalalau III. As noted, the harvesting of the ualua and noni plants are not taking place near the landfill activities and proposed detention basin. Therefore, adverse impacts to the collection ualua and noni plants are not anticipated by the proposed project.

Thank you again for your comments on the Draft EA.

Very truly yours,


MILTON ARAKAWA, A.I.C.P.
DIRECTOR OF PUBLIC WORKS AND
ENVIRONMENTAL MANAGEMENT

MA

Enclosure

cc: Elaine Baker, County of Maui, Department of Public Works and Environmental Management (w/enclosure)

Mich Hirano, Munekiyo & Hiraga, Inc. (w/out enclosure)

F:\DATA\COMDPWHansLFR\response Letters to Agencies from DPWEM\Letter to OHA.wpd

LINDA LINGOLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 10, 2004

Mr. Mitch Hirano
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2004.1449
DOC NO: 0405CD04

Dear Mr. Hirano,

SUBJECT: Chapter 6E-42 Historic Preservation Review - Draft Environmental Assessment (EA) for
the Proposed County of Maui's Hana Landfill Land Acquisition
Kawalpapa Ahupua'a, Hana District, Island of Maui
TMK: (2) 1-3-006:012 and por. of 007

Thank you for the opportunity to review and comment on the Draft EA for the proposed County of Maui's Hana Landfill Land Acquisition, which was received by our staff on March 20, 2004.

Based on the submitted Draft EA, we understand the County of Maui, Department of Public Works and Environmental Management (DPWEM), Solid Waste Division, is planning to expand the limits of the Hana Landfill Facility. The DPWEM is in the process of acquiring adjacent lands from the State of Hawaii to incorporate an area of landfill encroachment. The DPWEM is seeking to acquire a portion of parcel 007 to include a buffer zone surrounding the landfill area.

In 2003 Xamanek Researches Inc. conducted an archaeological assessment of the subject properties. We have reviewed and accepted the report documenting the negative findings (*An Archaeological Assessment of Portions of the Hana Landfill and Adjacent State Land in Kawalpapa Ahupua'a, Hana District, Island of Maui* [TMK: 1-3-00: Parcel 12 and Portion of Parcel 7] Fredericksen 2003) (SHPD DOC NO.: 0310MK29/LOG NO.: 2003.2184).

Given the above information, we believe there will be "no historic properties affected" by the proposed undertaking. However, we request the opportunity to review future permitted actions involving the County of Maui landfill expansion as other portions of parcels 007 and 012 are currently unaltered. Expansion into these areas may warrant additional work, including an archaeological inventory survey.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

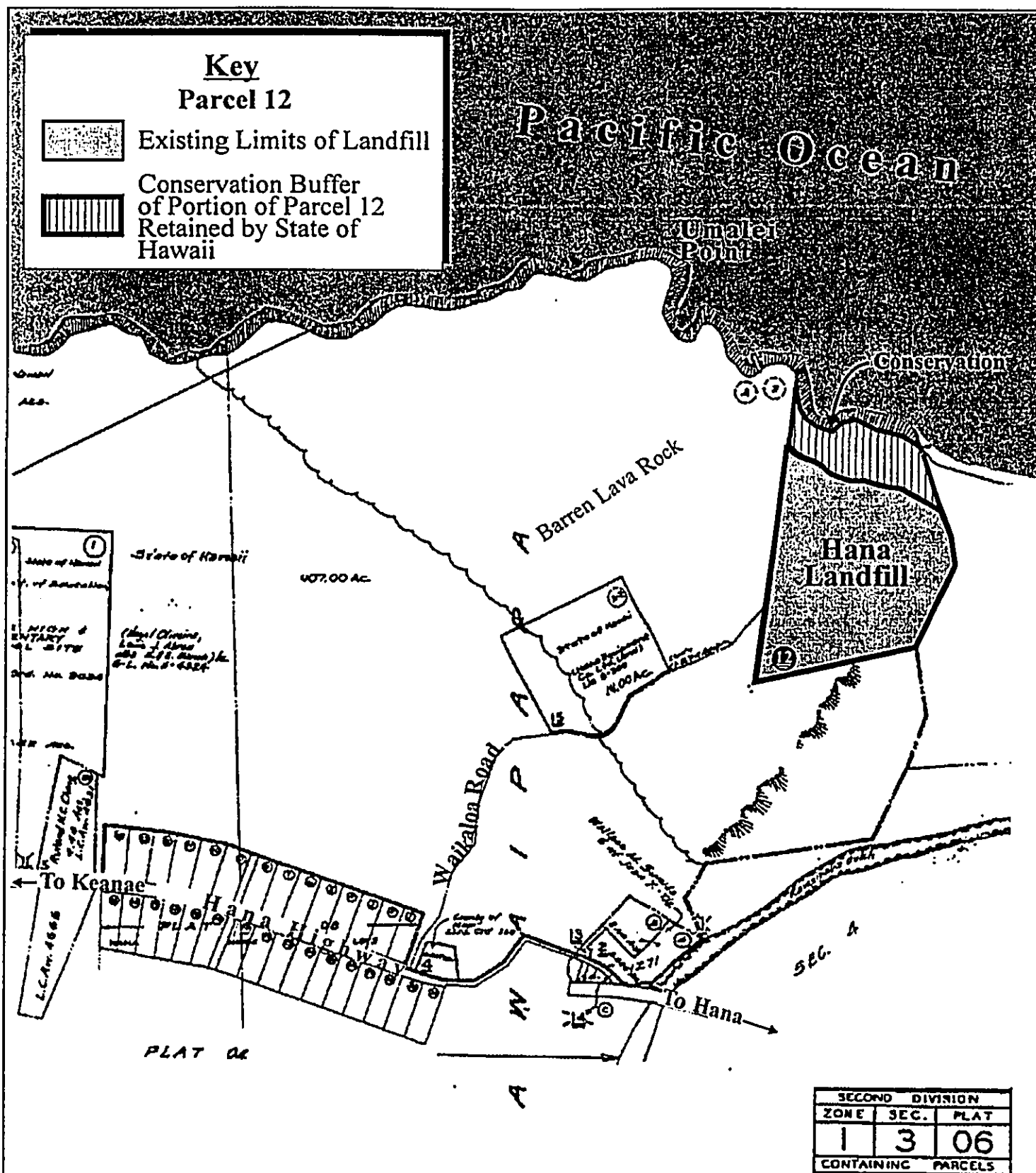
Aloha,

P. Holly McElDowney
P. Holly McElDowney, Administrator
State Historic Preservation Division

Exhibit "A"

CD:jen

c: Michael Foley, Director, Dept of Planning, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793



Source: U.S.G.S.

County of Maui's Hana Landfill Land Acquisition Parcel 12 Ownership Map

NOT TO SCALE



Prepared for: County of Maui, Department of Public Works
 and Environmental Management

MUNEKIYO & HIRAGA, INC.

COMDPW/Hana EP/Parcel 12 Ownership Map

MAY 13 2004

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

PETER T. YOUNG
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BOARD OF LAND AND NATURAL RESOURCES
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CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 10, 2004

Mr. Mitch Hirano
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2004.1449
DOC NO: 0405CD04

Dear Mr. Hirano,

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Draft Environmental Assessment (EA) for the Proposed County of Maui's Hana Landfill Land Acquisition
Kawaipapa Ahupua'a, Hana District, Island of Maui
TMK: (2) 1-3-006:012 and por. of 007**

Thank you for the opportunity to review and comment on the Draft EA for the proposed County of Maui's Hana Landfill Land Acquisition, which was received by our staff on March 20, 2004.

Based on the submitted Draft EA, we understand the County of Maui, Department of Public Works and Environmental Management (DPWEM), Solid Waste Division, is planning to expand the limits of the Hana Landfill Facility. The DPWEM is in the process of acquiring adjacent lands from the State of Hawaii to incorporate an area of landfill encroachment. The DPWEM is seeking to acquire a portion of parcel 007 to include a buffer zone surrounding the landfill area.

In 2003 Xamanek Researches Inc. conducted an archaeological assessment of the subject properties. We have reviewed and accepted the report documenting the negative findings (*An Archaeological Assessment of Portions of the Hana Landfill and Adjacent State Land in Kawaipapa Ahupua'a, Hana District, Island of Maui* [TMK: 1-3-06: Parcel 12 and Portion of Parcel 7] Fredericksen 2003) (SHPD DOC NO.: 0310MK29/LOG NO.: 2003.2184).

Given the above information, we believe there will be "no historic properties affected" by the proposed undertaking. However, we request the opportunity to review future permitted actions involving the County of Maui landfill expansion as other portions of parcels 007 and 012 are currently unaltered. Expansion into these areas may warrant additional work, including an archaeological inventory survey.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

Aloha,


P. Holly McEldowney, Administrator
State Historic Preservation Division

CD:jen

EXHIBIT "A"

c: Michael Foley, Director, Dept of Planning, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

APR 19 2004

ALAN M. ARAKAWA
Mayor

ALICE L. LEE
Director

HERMAN T. ANDAYA
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165

April 13, 2004

Mr. Michael Munekiyo, A.I.C.P.
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

**SUBJECT: COUNTY OF MAUI'S HANA LANDFILL
LAND ACQUISITION**

In response to Mr. Mich Hirano's March 26, 2004 letter,
please be advised that we have reviewed the draft Environmental
Assessment (EA) for the subject project and do not have any
comment to offer.

Thank you for the opportunity to comment. We are returning
the draft EA for your use.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Alice L. Lee".

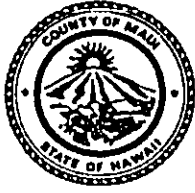
ALICE L. LEE
Director

ETO:hs

Enclosure

c: Housing Administrator

ALAN M. ARAKAWA
Mayor



APR 02 2004

GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

March 31, 2004

Michael T. Munekiyo, A.I.C.P.
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

SUBJECT: COUNTY OF MAUI'S HANA LANDFILL LAND ACQUISITION

We have reviewed the Draft Environmental Assessment for the subject project and have no comments or objections to the proposed action.

Thank you for the opportunity to review and comment. Should there be any questions, please contact Mr. Patrick Matsui, Chief of Parks Planning and Development, at 270-7387.

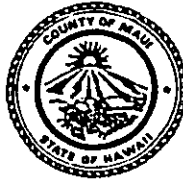
Sincerely,

A handwritten signature in black ink, appearing to read "Glenn T. Correa".

GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning and Development

ALAN M. ARAKAWA
Mayor
MICHAEL W. FOLEY
Director
WAYNE A. BOTEILHO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

April 19, 2004

Mr. Mich Hirano, AICP
Munekiyo & Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

RE: Comments on the Draft Environmental Assessment (DEA) for the
Hana Landfill and Land Acquisition at TMK 1-3-006: 007 and 012,
Hana, Island of Maui, Hawaii (LTR 2004/1120)

The Maui Planning Department (Department) has reviewed the above referenced document and provides the following comments.

1. The land use designations for the property are provided in the following table. Please refer to the attached maps for further clarification.

	Parcel 12		Parcel 7	
State Land Use	Agricultural	Conservation	Agricultural	
Hana Community Plan	Public/Quasi Public	Public/Quasi Public	Agricultural	Light Industrial
County Zoning	Interim	No Zoning	Agricultural	Interim
Other	SMA Zone C, A4	SMA Zone C, A4, V29	SMA Zone C	SMA Zone C

Mr. Mich Hirano, AICP
April 14, 2004
Page 2

The zoning information on Page 37 of the DEA is incorrect for both parcels. The land use analysis should be revised to reflect the correct designations.

In reference to the attached aerial photo (date: 2000), it appears that mass grading/clearing has occurred to the north and appears to be directly related to the activities on Parcel 12. Please clarify.

2. Required Land Use Permits

Chapter 205, HRS, does not outright permit landfill operations in either the State Agricultural or Conservation Districts. The DEA reports that the Board of Land and Natural Resources (BLNR) granted right-of-entry in 1969 in favor of the County of Maui to utilize the existing landfill (see Page 1). The DEA states that BLNR granted approval of the present landfill operations on Parcel 12 prior to the establishment of the State Agriculture and Conservation District Boundaries (see Page 33). Further, the DEA states that pursuant to Section 13-5-37, HAR, the Hana Landfill is a "nonconforming use" within the State Conservation District (see Page 33).

The landfill operations/activities extend over the State Agricultural District boundary. As such, include the supporting documentation in the Final EA establishing the "nonconforming use" in both the State Agricultural and Conservation Districts.

The DEA notes that Executive Order 3304 sets aside the land for the "Hana Garbage Dump Site," which therefore exempts the land from the County Agricultural and Interim zoning use restrictions (see Page 37). In review of Executive Order 3304 as submitted in the permit application, the County agrees that while the Executive Order sets aside the land for the dump site, it does not outright exempt the use from Title 19, MCC, Zoning Ordinance. Include additional supporting documentation exempting the use from Title 19, MCC, in the Final EA.

Please be advised that if the foregoing documentation can not establish the "nonconforming use" on Parcel 12, then the following land use permits are required for past and present uses on Parcels 7 and 12 as identified in the document and summarized below:

Mr. Mich Hirano, AICP
 April 14, 2004
 Page 3

	Parcel 12	Parcel 7
State Land Use Special Use Permit (SUP)	Historical landfill activities Present landfill activities Scrap metal operations* Biodegradable operations* Hana Recycling operations* Landfill office*	Use of the entire property, including the encroachment area and buffer zone
State Conservation District Use Permit (CDUA)	Historical landfill activities Present landfill activities Scrap metal operations* Biodegradable operations* Hana Recycling operations* Landfill office*	not applicable
County Special Use Permit (CUP)	not applicable	Portion of the property that is designated as Agricultural in the Hana Community Plan, including the encroachment area and buffer zone
County Use Variance (BVA)	Historical landfill activities Present landfill activities Scrap metal operations Biodegradable operations Hana Recycling operations Landfill office	Portion of the property that is designated as Light Industrial in the Hana Community Plan
Special Management Area Permit (SMA)	Historical landfill activities Present landfill activities Scrap metal operations Biodegradable operations Hana Recycling operations Landfill office	Use of the entire property, including the encroachment area and buffer zone
* Delineate Figure 3, Site Plan, to determine the location of the use.		

It should be further noted that the land areas on both parcels exceed 15 acres in total area, and the State Land Use Commission is the proper authority to grant the State Special Use Permit.

- Executive Order 3304 depicts the eastern property boundary of Parcel 12 as extending 250 feet west and parallel to the high water mark of the shoreline. The maps and figures in the Final EA should reflect the correct property boundary.

Mr. Mich Hirano, AICP
April 14, 2004
Page 4

4. Revise Figure 3, Site Plan, to include the following:
 - a. Delineate the State Land Use Agricultural/Conservation district boundary.
 - b. Delineate the full area of the proposed expansion and buffer zone on Parcel 7.
 - c. Confirm the location of the eastern property boundary as noted in Item #3 above.
 - d. Delineate the Pi'ilani Trail as referred to under "Recreational Resources" on Page 21 of the DEA.
5. Include the most recent groundwater and methane gas testing results. Provide the permissible limits for each analyte per DOH and EPA standards/guidelines.
6. Municipal Solid Waste Landfill Standards and Operations:
 - a. Provide current data for the landfill such as the estimated capacity, longevity, projected closure date, etc.
 - b. The EPA has developed siting and construction criteria for new and existing municipal solid waste landfills. These provisions are detailed in the U.S. Environmental Protection Agency's (EPA's) Municipal Solid Waste Landfill (MSWLF) Criteria (Code of Federal Regulations, Volume 40, Part 258. See Federal Register, October 9, 1991, 56FR50978). EPA requirements include, at a minimum, the following:
 - i. No landfill shall be constructed within a 100-year flood plain.
 - ii. No landfill should be constructed within 1,200 feet of any water supply well.

Page 24 of the DEA states that the landfill operations are currently located within Zone A4, areas of 100-year flooding. Discuss how the existing landfill and proposed expansion areas comply with EPA MSWLF Criteria.

Mr. Mich Hirano, AICP
April 14, 2004
Page 5

Identify any private/public water wells located down gradient to the existing and proposed expansion areas of the landfill. Provide a list, ownership, and distance of the wells from the properties.

Describe the construction measures and materials required in the landfill expansion to comply with DOH and EPA requirements (e.g., liners).

7. The discussion pertaining to "Archaeological Resources" on Page 17 of the DEA incorrectly refers to Appendix "A" for the field assessment. Appendix "A" is listed as the "Survey, Metes and Bounds."
8. Include the Drainage Analysis for the proposed Detention Basin for the landfill in the Final EA.
9. Discuss the potential impacts of windblown litter on coastal resources. Provide a discussion of ongoing and proposed mitigative measures.
10. Discuss the potential impacts of leachate from the existing landfill and the proposed expansion to the underlying aquifer and coastal waters. Provide a discussion of ongoing and proposed mitigative measures.
11. Provide a summary and status of the comprehensive waste management plan as noted on Page 37.
12. Provide an updated list of all required permit approvals considering Items #2 of this letter.

Thank you for your cooperation. Should you require additional clarification, please contact Ms. Kivette A. Caigoy, Environmental Planner, at 270-7735.

Sincerely,



MICHAEL W. FOLEY
Planning Director

CHARMAINE TAVARES
Mayor
MILTON M. ARAKAWA, A.I.C.P.
Director
MICHAEL M. MIYAMOTO
Deputy Director



**COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration
DAVID TAYLOR, P.E.
Wastewater Reclamation Division
CARY YAMASHITA, P.E.
Engineering Division
TRACY N. TAKAMINE, P.E.
Solid Waste Division
BRIAN HASHIRO, P.E.
Highways Division

May 4, 2007

Jeffrey S. Hunt, Director
Department of Planning
250 South High Street
Wailuku, Hawai'i 96793

**SUBJECT: PROPOSED COUNTY OF MAUI HANA LANDFILL AND LAND
ACQUISITION AT TMK 1-3-006: 007 (POR.) AND 012 (POR.)**

Dear Mr. Hunt:

Thank you for your Department's comment letter of April 19, 2004 on the subject project. On behalf of the Department of Public Works and Environmental Management (DPWEM), we wish to provide the following information in response to your comments. The responses are provided in the same order as your comments.

1. The land use descriptions provided for the parcels are noted and will be included in the Draft Revised EA document.

A portion of the mass grading and clearing to the north of the landfill boundaries are part of the encroachment area. The subject land acquisition would enable the expansion of the landfill boundaries to incorporate this encroachment area. Areas further to the north and east of the encroachment area that appear to be cleared will be rehabilitated by the County of Maui, DPWEM, Solid Waste Division.

2. Your comments on the permitting requirements are noted. The DPWEM will be applying for a State Land Use Special Use Permit, County of Maui Special Use Permit and Special Management Area Use Permit.
3. The site maps and project description will be revised accordingly to exclude the 250 foot strip between the landfill eastern boundary and the coastline.

Jeffrey S. Hunt, Director
May 4, 2007
Page 2

4. The Site Plan in Figure 3 of the Draft Revised EA will be revised to show the areas as indicated.
5. The most recent groundwater monitoring test results will be included in the Revised Draft EA as requested. Methane gas readings are zero on the 5 percent scale of the Gastech monitor for each of the three (3) wells since 1994. This information on the methane gas monitoring will also be included.
6.
 - a. Data on the estimated capacity, longevity and projected closure date for the landfill will be included in the Draft Revised EA.
 - b. The landfill operations have been in existence since 1969. The new landfill criteria referenced in your letter are in effect for new landfills established since 1993.
 - c. In regards to any private/public water wells located down gradient to the existing and proposed expansion areas of the landfill, it is noted that field investigations determined that groundwater flows in a southerly direction. Therefore, areas down gradient from the landfill are towards the south. Consultation with the Commission of Water Resource Management indicated that there are two (2) County wells on the parcel, west of the Hana High and Elementary School. These wells are over 4,000 feet, west of the landfill.
 - d. The expansion of the landfill boundaries are to incorporate an existing 5.4-acre area of encroachment on the adjacent State owned property and to include the areas where the environmental monitor wells and methane gas probes are located. The remaining area of expansion will be retained as a buffer zone. The storm water detention basin will be excavated from existing material and a berm will be built around the detention basin to capture the storm water runoff.
7. The appendices will be amended accordingly.
8. The drainage information will be included in the Draft EA, as requested.
9. There is no waste generating windblown litter near the shoreline. Distance from the shoreline and the daily covering of the MSW area are the mitigative measures to prevent windblown litter from reaching the shoreline.
10. The potential leachate from the existing landfill operations are monitored through the groundwater monitoring program. Daily cover of the MSW helps mitigate the

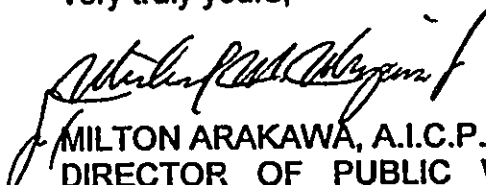
Jeffrey S. Hunt, Director
May 4, 2007
Page 3

generation of leachate from the rainwater percolating through the waste. The proposed detention basin will capture and hold the storm water runoff from the MSW area.

11. The comprehensive waste management plan is the Recycle Hana program where the motor oil and glass are recycled. Scrap metal and green waste are separated as well. The solid materials are trucked off the island to appropriate disposal and recycle facilities. The organic material decomposes onsite.
12. See response to Item 2, above for the list of permit approvals.

Again, thank you for your comments.

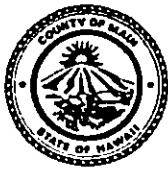
Very truly yours,


MILTON ARAKAWA, A.I.C.P.
DIRECTOR OF PUBLIC WORKS AND
ENVIRONMENTAL MANAGEMENT

MA

cc: Elaine Baker, County of Maui, Department of Public Works and Environmental
Management
Mich Hirano, Munekiyo & Hiraga, Inc.

F:\DATA\COMDPWHana\FIR\response Letters to Agencies from DPWEM\Letter to Planning Dept..wpd



ALAN M. ARAKAWA
MAYOR

OUR REFERENCE
YOUR REFERENCE

POLICE DEPARTMENT COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

APR 21 2004



THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUHAUPIO R. AKANA
DEPUTY CHIEF OF POLICE

April 16, 2004

Mr. Michael Munekiyo, A.I.C.P.
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793


Dear Mr. Munekiyo:

SUBJECT: County of Maui's Hana Landfill Land Acquisition

Thank you for your letter of March 26, 2004, requesting comments on the above subject.

We have reviewed the proposed summary and have enclosed our comments and recommendations. Thank you for giving us the opportunity to comment on this project.

Very truly yours,


Acting Assistant Chief Glenn Miyahira
for: Thomas M. Phillips
Chief of Police

Enclosure

c: Michael W. Foley, Dept. of Planning

COPY

TO: THOMAS PHILLIPS, CHIEF, MAUI POLICE DEPARTMENT
FROM: JOHN AKANA, POLICE OFFICER, DISTRICT III - HANA
VIA: CHANNELS
SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT, HANA LANDFILL

*Recommend
Approved
Forwarded to
Munekiyo
4/12/04
D. J. [Signature]*

Sir,

County of Maui, Department of Public Works, Environmental Management, and the Solid Waste Division want to expand the limits of the Hana Landfill site by acquiring additional lands from the State which the County is currently encroaching on. The landfill includes three components: residential and light commercial waste, scrap metal, and biodegradable materials. The current location of the residential waste area is already encroached on the parcel currently sought for acquisition.

The DPWEM wants to consolidate two parcels of land into one. This will expand the "buffer zone" and the landfill boundaries will be realigned for environmental monitoring. The second proposed action involves the construction of a 100-foot by 100-foot run-off detention basin. Run-off from the landfill will be diverted to this basin.

Chapter 11, section "C", describes the Hana patrol division beat boundaries, and the location of our station.

As mentioned previously in a memorandum (attached), I have spoken to James PERRY of Hana Public Works. He is in strong support of the project and will be submitting his own suggestions to the planner. The local residence in the Wakiu area also seem to be in favor of the expansion as it will not impact their properties.

I see no concerns for our department in this proposed expansion. As a community member, I strongly support this acquisition.

RECOMMEND APPROVAL, NO IMPACT ON RESIDENTIAL AREA
[Signature]
104/12/04

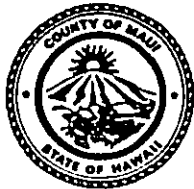
Respectfully submitted

John AKANA
04/12/04

ALAN M. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT
DEVELOPMENT SERVICES ADMINISTRATION
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

JUL 08 2004
RALPH M. NAGAMINE, L.S., P.E.
Development Services Administration

TRACY TAKAMINE, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

JOHN D. HARDER
Solid Waste Division

July 6, 2004

Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

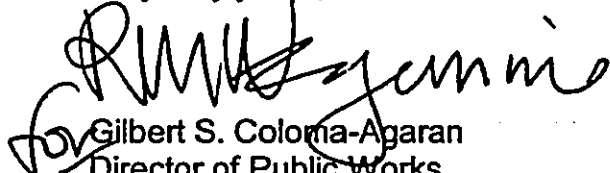
Subject: Draft Environmental Assessment for Maui County's Hana
Landfill Land Acquisition
TMK (2) 1-3-006: 012

Dear Mr. Hirano:

We reviewed the subject application and have no comments at this time.

Please call Milton Arakawa at 270-7845 if you have any questions regarding this letter.

Very truly yours,


Gilbert S. Coloma-Agaran
Director of Public Works
and Environmental Management

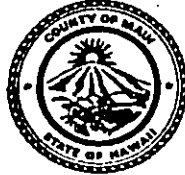
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c: Planning Department
Solid Waste Division

APR 20 2004

ALAN M. ARAKAWA
Mayor



GEORGE Y. TENGAN
Director

JEFFREY T. PEARSON, P.E.
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 South High Street
WAILUKU, MAUI, HAWAII 96793-2155
Telephone (808) 270-7816 • Fax (808) 270-7833
www.mauewater.org

April 12, 2004

Mr. Mich Hirano, Planner
Munekyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku HI 96793

Re: County of Maui's Hana Landfill Acquisition

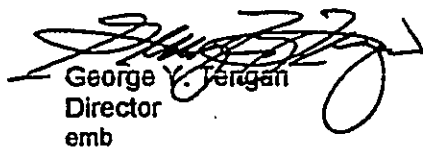
Dear Mr. Hirano:

Thank you for the opportunity to provide comments on this Environmental Assessment (EA). The Department of Water Supply provides the following information:

The landfill is not serviced by the Department system. No impact on potable water use is anticipated. The landfill overlies the Kawaipapa aquifer with a sustainable yield of 48 million gallons per day (MGD). We note that best management practices are proposed for construction of the detention basin, including groundwater monitoring during landfill operations. We have attached additional construction BMPs for your reference.

Should you have any questions, please contact our Water Resources and Planning Division at 270-7199.

Sincerely,


George Y. Tengan
Director
emb

c: engineering division
applicant, with attachment

Selected BMP's from "Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters"-EPA

C:\WPdocs\EAs EISs\Hana Landfill DEA.wpd

By Water All Things Find Life



United States
Environmental Protection
Agency

Office of Water
Washington, DC 20460

840-B-92-002
January 1993

Guidance Specifying Management Measures For Sources Of Nonpoint Pollution In Coastal Waters

Issued Under the Authority of
Section 6217(g) of the Coastal Zone Act
Reauthorization Amendments of 1990

III. CONSTRUCTION ACTIVITIES

A. Construction Site Erosion and Sediment Control Management Measure

- (1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction, and
- (2) Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

1. Applicability

This management measure is intended to be applied by States to all construction activities on sites less than 5 acres in areas that do not have an NPDES permit¹ in order to control erosion and sediment loss from those sites. This management measure does not apply to: (1) construction of a detached single family home on a site of 1/2 acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. (NOTE: All construction activities, including clearing, grading, and excavation, that result in the disturbance of areas greater than or equal to 5 acres or are a part of a larger development plan are covered by the NPDES regulations and are thus excluded from these requirements.) Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The goal of this management measure is to reduce the sediment loadings from construction sites in coastal areas that enter surface waterbodies. This measure requires that coastal States establish new or enhance existing State erosion and sediment control (ESC) programs and/or require ESC programs at the local level. It is intended to be part of a comprehensive land use or watershed management program, as previously detailed in the Watershed and Site Development Management Measures. It is expected that State and local programs will establish criteria determined by local conditions (e.g., soil types, climate, meteorology) that reduce erosion and sediment transport from construction sites.

Runoff from construction sites is by far the largest source of sediment in urban areas under development (York County Soil and Water Conservation District, 1990). Soil erosion removes over 90 percent of sediment by tonnage in urbanizing areas where most construction activities occur (Canning, 1988). Table 4-14 illustrates some of the

¹ On May 27, 1992, the United States Court of Appeals for the Ninth Circuit invalidated EPA's exemption of construction sites smaller than 5 acres from the storm water permit program in *Natural Resources Defense Council v. EPA*, 965 F.2d 759 (9th Cir. 1992). EPA is conducting further rulemaking proceedings on this issue and will not require permit applications for construction activities under 5 acres until further rulemaking has been completed.

measured sediment loading rates associated with construction activities found across the United States. As seen in Table 4-14, erosion rates from natural areas such as undisturbed forested lands are typically less than one ton/acre/year, while erosion from construction sites ranges from 7.2 to over 1,000 tons/acre/year.

Table 4-14. Erosion and Sediment Problems Associated With Construction

Location	Problem	Reference
United States	Sediment loading rates vary from 36.5 to 1,000 ton/ac/yr. These are 5 to 500 times greater than those from undeveloped land. Approximately 600 million tons of soil erodes from developed sites each year. Construction site sediment in runoff can be 10 to 20 times greater than that from agricultural lands.	York County Soil and Water Conservation District, 1990
Franklin County, FL	Sediment yield (ton/ac/yr): forest < 0.5 rangeland < 0.5 tilled 1.4 construction site 30 established urban < 0.5	Franklin County, FL
Wisconsin	Erosion rates range from 30 to 200 ton/ac/yr (10 to 20 times those of cropland).	Wisconsin Legislative Council, 1991
Washington, DC	Erosion rates range from 35 to 45 ton/ac/yr (10 to 100 times greater than agriculture and stabilized urban land uses).	MWCOG, 1987
Anacostia River Basin, VA, MD, DC	Sediment yields from portions of the Anacostia Basin have been estimated at 75,000 to 132,000 ton/yr.	U.S. Army Corps of Engineers, 1990
Washington	Erosion rates range from 50 to 500 ton/ac/yr. Natural erosion rates from forests or well-sodded prairies are 0.01 to 1.0 ton/ac/yr.	Washington Department of Ecology, 1989
Anacostia River Basin, VA, MD, DC	Erosion rates range from 7.2 to 100.8 ton/ac/yr.	USGS, 1978
Alabama North Carolina Louisiana Oklahoma Georgia Texas Tennessee Pennsylvania Ohio Kentucky	1.4 million tons eroded per year. 6.7 million tons eroded per year. 5.1 million tons eroded per year. 4.2 million tons eroded per year. 3.8 million tons eroded per year. 3.5 million tons eroded per year. 3.3 million tons eroded per year. 3.1 million tons eroded per year. 3.0 million tons eroded per year. 3.0 million tons eroded per year.	Woodward-Clyde, 1991

Eroded sediment from construction sites creates many problems in coastal areas including adverse impacts on water quality, critical habitats, submerged aquatic vegetation (SAV) beds, recreational activities, and navigation (APWA, 1991). For example, the Miami River in Florida has been severely affected by pollution associated with upland erosion. This watershed has undergone extensive urbanization, which has included the construction of many commercial and residential buildings over the past 50 years. Sediment deposited in the Miami River channel contributes to the severe water quality and navigation problems of this once-thriving waterway, as well as Biscayne Bay (SFWMD, 1988).

ESC plans are important for controlling the adverse impacts of construction and land development and have been required by many State and local governments, as shown in Table 4-13 (in the Site Development section of this chapter). An ESC plan is a document that explains and illustrates the measures to be taken to control erosion and sediment problems on construction sites (Connecticut Council on Soil and Water Conservation, 1988). It is intended that existing State and local erosion and sediment control plans may be used to fulfill the requirements of this management measure. Where existing ESC plans do not meet the management measure criteria, inadequate plans may be enhanced to meet the management measure guidelines.

Typically, an ESC plan is part of a larger site plan and includes the following elements:

- Description of predominant soil types;
- Details of site grading including existing and proposed contours;
- Design details and locations for structural controls;
- Provisions to preserve topsoil and limit disturbance;
- Details of temporary and permanent stabilization measures; and
- Description of the sequence of construction.

ESC plans ensure that provisions for control measures are incorporated into the site planning stage of development and provide for the reduction of erosion and sediment problems and accountability if a problem occurs (York County Soil and Water Conservation District, 1990). An effective plan for urban runoff management on construction sites will control erosion, retain sediments on site, to the extent practicable, and reduce the adverse effects of runoff. Climate, topography, soils, drainage patterns, and vegetation will affect how erosion and sediment should be controlled on a site (Washington State Department of Ecology, 1989). An effective ESC plan includes both structural and nonstructural controls. Nonstructural controls address erosion control by decreasing erosion potential, whereas structural controls are both preventive and mitigative because they control both erosion and sediment movement.

Typical nonstructural erosion controls include (APWA, 1991; York County Soil and Water Conservation District, 1990):

- Planning and designing the development within the natural constraints of the site;
- Minimizing the area of bare soil exposed at one time (phased grading);
- Providing for stream crossing areas for natural and man-made areas; and
- Stabilizing cut-and-fill slopes caused by construction activities.

Structural controls include:

- Perimeter controls;
- Mulching and seeding exposed areas;
- Sediment basins and traps; and
- Filter fabric, or silt fences.

Some erosion and soil loss are unavoidable during land-disturbing activities. While proper siting and design will help prevent areas prone to erosion from being developed, construction activities will invariably produce conditions where erosion may occur. To reduce the adverse impacts associated with construction, the construction management measure suggests a system of nonstructural and structural erosion and sediment controls for incorporation into an

ESC plan. Erosion controls have distinct advantages over sediment controls. Erosion controls reduce the amount of sediment transported off-site, thereby reducing the need for sediment controls. When erosion controls are used in conjunction with sediment controls, the size of the sediment control structures and associated maintenance may be reduced, decreasing the overall treatment costs (SWRPC, 1991).

3. Management Measure Selection

This management measure was selected to minimize sediment being transported outside the perimeter of a construction site through two broad performance goals: (1) reduce erosion and (2) retain sediment onsite, to the extent practicable. These performance goals were chosen to allow States and local governments flexibility in specifying practices appropriate for local conditions.

While several commentors responding to the draft (May 1991) guidance expressed the need to define "more measurable, enforceable ways" to control sediment loadings, other commentors stressed the need to draft management measures that do not conflict with existing State programs and allow States and local governments to determine appropriate practices and design standards for their communities. These management measures were selected because virtually all coastal States control construction activities to prevent erosion and sediment loss.

The measures were specifically written for the following reasons:

- (1) Predevelopment loadings may vary greatly, and some sediment loss is usually inevitable;
- (2) Current practice is built on the use of systems of practices selected based on site-specific conditions; and
- (3) The combined effectiveness of erosion and sediment controls in systems is not easily quantified.

4. Erosion Control Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Erosion controls are used to reduce the amount of sediment that is detached during construction and to prevent sediment from entering runoff. Erosion control is based on two main concepts: (1) disturb the smallest area of land possible for the shortest period of time, and (2) stabilize disturbed soils to prevent erosion from occurring.

a. Schedule projects so clearing and grading are done during the time of minimum erosion potential.

Often a project can be scheduled during the time of year that the erosion potential of the site is relatively low. In many parts of the country, there is a certain period of the year when erosion potential is relatively low and construction scheduling could be very effective. For example, in the Pacific region if construction can be completed during the 6-month dry season (May 1 - October 31), temporary erosion and sediment controls may not be needed. In addition, in some parts of the country erosion potential is very high during certain parts of the year such as the spring thaw in northern areas. During this time of year, melting snowfall generates a constant runoff that can erode soil. In addition, construction vehicles can easily turn the soft, wet ground into mud, which is more easily washed offsite. Therefore, in the north, limitations should be placed on grading during the spring thaw (Goldman et al., 1986).

b. Stage construction.

Avoid areawide clearance of construction sites. Plan and stage land disturbance activities so that only the area currently under construction is exposed. As soon as the grading and construction in an area are complete, the area should be stabilized.

By clearing only those areas immediately essential for completing site construction, buffer zones are preserved and soil remains undisturbed until construction begins. Physical markers, such as tape, signs, or barriers, indicating the limits of land disturbance, can ensure that equipment operators know the proposed limits of clearing. The area of the watershed that is exposed to construction is important for determining the net amount of erosion. Reducing the extent of the disturbed area will ultimately reduce sediment loads to surface waters. Existing or newly planted vegetation that has been planted to stabilize disturbed areas should be protected by routing construction traffic around and protecting natural vegetation with fencing, tree armoring, retaining walls, or tree wells.

c. Clear only areas essential for construction.

Often areas of a construction site are unnecessarily cleared. Only those areas essential for completing construction activities should be cleared, and other areas should remain undisturbed. Additionally, the proposed limits of land disturbance should be physically marked off to ensure that only the required land area is cleared. Avoid disturbing vegetation on steep slopes or other critical areas.

d. Locate potential nonpoint pollutant sources away from steep slopes, waterbodies, and critical areas.

Material stockpiles, borrow areas, access roads, and other land-disturbing activities can often be located away from critical areas such as steep slopes, highly erodible soils, and areas that drain directly into sensitive waterbodies.

e. Route construction traffic to avoid existing or newly planted vegetation.

Where possible, construction traffic should travel over areas that must be disturbed for other construction activity. This practice will reduce the area that is cleared and susceptible to erosion.

f. Protect natural vegetation with fencing, tree armoring, and retaining walls or tree wells.

Tree armoring protects tree trunks from being damaged by construction equipment. Fencing can also protect tree trunks, but should be placed at the tree's drip line so that construction equipment is kept away from the tree. The tree drip line is the minimum area around a tree in which the tree's root system should not be disturbed by cut, fill, or soil compaction caused by heavy equipment. When cutting or filling must be done near a tree, a retaining wall or tree well should be used to minimize the cutting of the tree's roots or the quantity of fill placed over the tree's roots.

g. Stockpile topsoil and reapply to revegetate site.

Because of the high organic content of topsoil, it cannot be used as fill material or under pavement. After a site is cleared, the topsoil is typically removed. Since topsoil is essential to establish new vegetation, it should be stockpiled and then reapplied to the site for revegetation, if appropriate. Although topsoil salvaged from the existing site can often be used, it must meet certain standards and topsoil may need to be imported onto the site if the existing topsoil is not adequate for establishing new vegetation.

h. Cover or stabilize topsoil stockpiles.

Unprotected stockpiles are very prone to erosion and therefore stockpiles must be protected. Small stockpiles can be covered with a tarp to prevent erosion. Large stockpiles should be stabilized by erosion blankets, seeding, and/or mulching.

i. Use wind erosion controls.

Wind erosion controls limit the movement of dust from disturbed soil surfaces and include many different practices. Wind barriers block air currents and are effective in controlling soil blowing. Many different materials can be used as wind barriers, including solid board fence, snow fences, and bales of hay. Sprinkling moistens the soil surface with water and must be repeated as needed to be effective for preventing wind erosion (Delaware DNREC, 1989); however, applications must be monitored to prevent excessive runoff and erosion.

j. Intercept runoff above disturbed slopes and convey it to a permanent channel or storm drain.

Earth dikes, perimeter dikes or swales, or diversions can be used to intercept and convey runoff above disturbed areas. An earth dike is a temporary berm or ridge of compacted soil that channels water to a desired location. A perimeter dike/swale or diversion is a swale with a supporting ridge on the lower side that is constructed from the soil excavated from the adjoining swale (Delaware DNREC, 1989). These practices should be used to intercept flow from denuded areas or newly seeded areas to keep the disturbed areas from being eroded from the uphill runoff. The structures should be stabilized within 14 days of installation. A pipe slope drain, also known as a pipe drop structure, is a temporary pipe placed from the top of a slope to the bottom of the slope to convey concentrated runoff down the slope without causing erosion (Delaware DNREC, 1989).

k. On long or steep, disturbed, or man-made slopes, construct benches, terraces, or ditches at regular intervals to intercept runoff.

Benches, terraces, or ditches break up a slope by providing areas of low slope in the reverse direction. This keeps water from proceeding down the slope at increasing volume and velocity. Instead, the flow is directed to a suitable outlet, such as a sediment basin or trap. The frequency of benches, terraces, or ditches will depend on the erodibility of the soils, steepness and length of the slope, and rock outcrops. This practice should be used if there is a potential for erosion along the slope.

l. Use retaining walls.

Often retaining walls can be used to decrease the steepness of a slope. If the steepness of a slope is reduced, the runoff velocity is decreased and, therefore, the erosion potential is decreased.

m. Provide linings for urban runoff conveyance channels.

Often construction increases the velocity and volume of runoff, which causes erosion in newly constructed or existing urban runoff conveyance channels. If the runoff during or after construction will cause erosion in a channel, the channel should be lined or flow control BMPs installed. The first choice of lining should be grass or sod since this reduces runoff velocities and provides water quality benefits through filtration and infiltration. If the velocity in the channel would erode the grass or sod, then riprap, concrete, or gabions can be used.

n. Use check dams.

Check dams are small, temporary dams constructed across a swale or channel. They can be constructed using gravel or straw bales. They are used to reduce the velocity of concentrated flow and, therefore, to reduce the erosion in

a swale or channel. Check dams should be used when a swale or channel will be used for a short time and therefore it is not feasible or practical to line the channel or implement flow control BMPs (Delaware DNREC, 1989).

o. *Seed and fertilize.*

Seeding establishes a vegetative cover on disturbed areas. Seeding is very effective in controlling soil erosion once a dense vegetative cover has been established. However, often seeding and fertilizing do not produce as thick a vegetative cover as do seed and mulch or netting. Newly established vegetation does not have as extensive a root system as existing vegetation and therefore is more prone to erosion, especially on steep slopes. Care should be taken when fertilizing to avoid untimely or excessive application. Since the practice of seeding and fertilizing does not provide any protection during the time of vegetative establishment, it should be used only on favorable soils in very flat areas and not in sensitive areas.

p. *Use seeding and mulch/mats.*

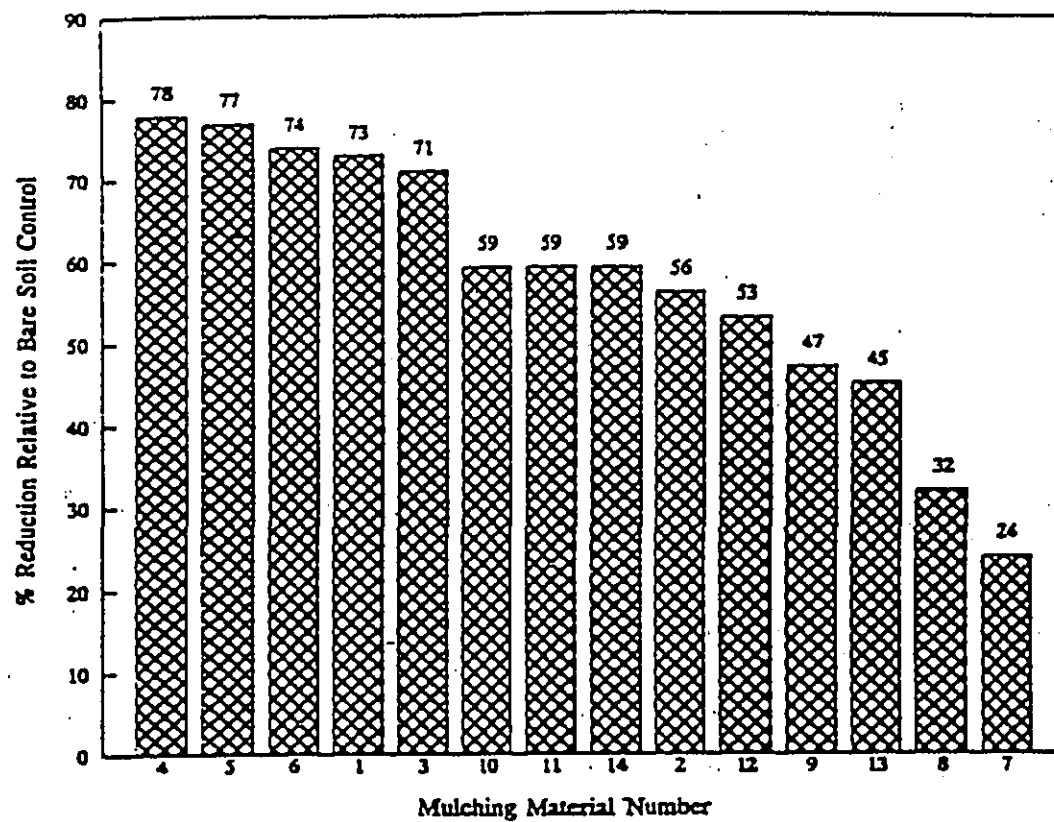
Seeding establishes a vegetative cover on disturbed areas. Seeding is very effective in controlling soil erosion once the vegetative cover has been established. The mulching/mats protect the disturbed area while the vegetation becomes established.

The management of land by using ground cover reduces erosion by reducing the flow rate of runoff and the raindrop impact. Bare soils should be seeded or otherwise stabilized within 15 calendar days after final grading. Denuded areas that are inactive and will be exposed to rain for 30 days or more should also be temporarily stabilized, usually by planting seeds and establishing vegetation during favorable seasons in areas where vegetation can be established. In very flat, non-sensitive areas with favorable soils, stabilization may involve simply seeding and fertilizing. Mulching and/or sodding may be necessary as slopes become moderate to steep, as soils become more erosive, and as areas become more sensitive.

q. *Use mulch/mats.*

Mulching involves applying plant residues or other suitable materials on disturbed soil surfaces. Mulchs/mats used include tacked straw, wood chips, and jute netting and are often covered by blankets or netting. Mulching alone should be used only for temporary protection of the soil surface or when permanent seeding is not feasible. The useful life of mulch varies with the material used and the amount of precipitation, but is approximately 2 to 6 months. Figure 4-5 shows water velocity reductions that could be expected using various mulching techniques. Similarly, Figure 4-6 shows reductions in soil loss achievable using various mulching techniques. During times of year when vegetation cannot be established, soil mulching should be applied to moderate slopes and soils that are not highly erodible. On steep slopes or highly erodible soils, multiple mulching treatments should be used. On a high-elevation or desert site where grasses cannot survive the harsh environment, native shrubs may be planted. Interlocking ceramic materials, filter fabric, and netting are available for this purpose. Before stabilizing an area, it is important to have installed all sediment controls and diverted runoff away from the area to be planted. Runoff may be diverted away from denuded areas or newly planted areas using dikes, swales, or pipe slope drains to intercept runoff and convey it to a permanent channel or storm drain. Reserved topsoil may be used to revegetate a site if the stockpile has been covered and stabilized.

Consideration should be given to maintenance when designing mulching and matting schemes. Plastic nets are often used to cover the mulch or mats; however, they can foul lawn mower blades if the area requires mowing.



Mulch Material	Characteristics
1	100% wheat straw/top net
2	100% wheat straw/two nets
3	70% wheat straw/30% coconut fiber
4	70% wheat straw/30% coconut fiber
5	100% coconut fiber
6	Nylon monofilament/two nets
7	Nylon monofilament/rigid/bonded
8	Vinyl monofilament/flexible/bonded
9	Curled wood fibers/top net
10	Curled wood fibers/two nets
11	Antiwash netting (jute)
12	Interwoven paper and thread
13	Uncrimped wheat straw - 2,242 kg/ha
14	Uncrimped wheat straw - 4,484 kg/ha

Figure 4-5. Water velocity reductions for different mulch treatments (adapted from Harding, 1990).

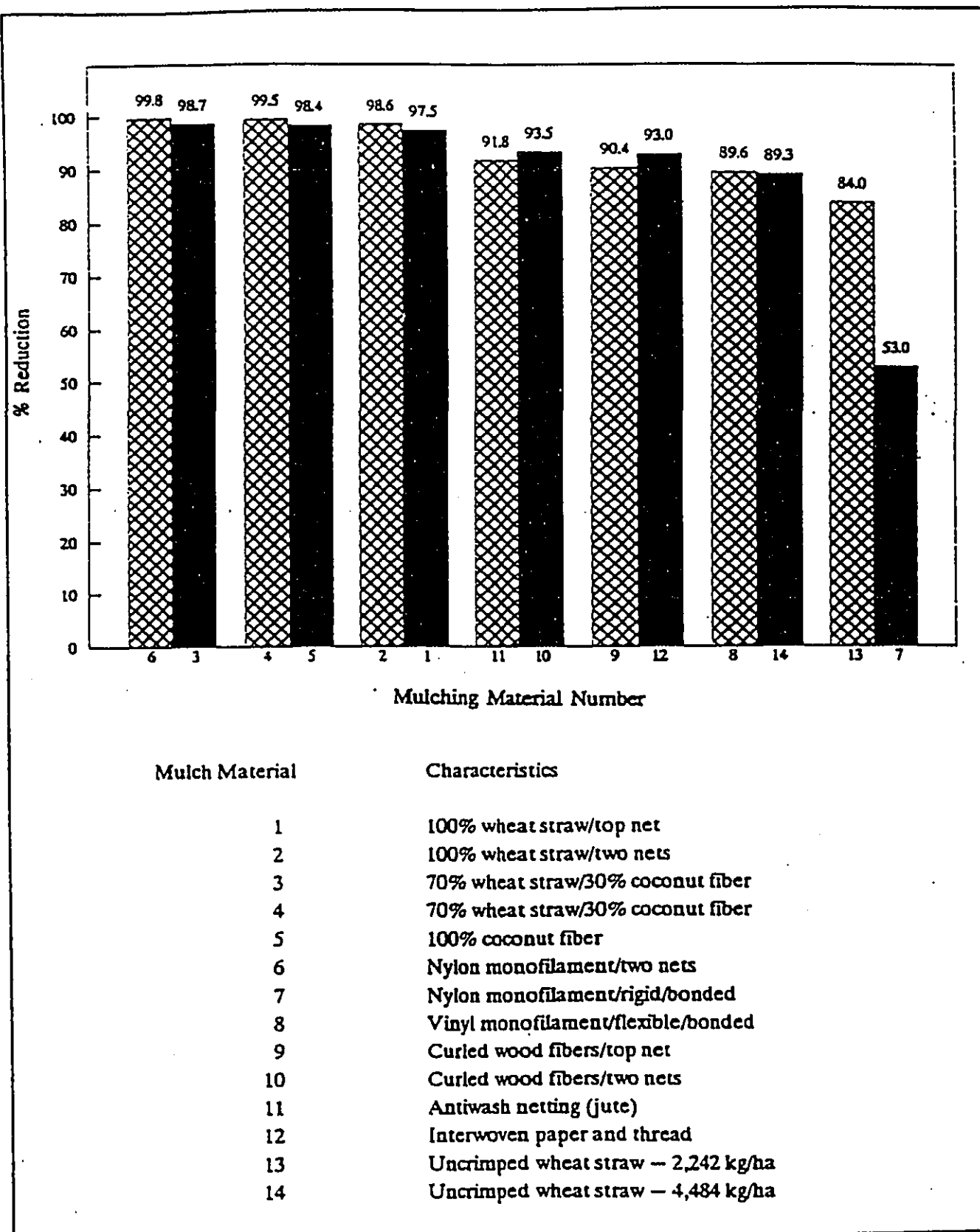


Figure 4-6. Actual soil loss reductions for different mulch treatments (adapted from Harding, 1990).

r. Use sodding.

Sodding permanently stabilizes an area. Sodding provides immediate stabilization of an area and should be used in critical areas or where establishment of permanent vegetation by seeding and mulching would be difficult. Sodding is also a preferred option when there is a high erosion potential during the period of vegetative establishment from seeding.

s. Use wildflower cover.

Because of the hardy drought-resistant nature of wildflowers, they may be more beneficial as an erosion control practice than turf grass. While not as dense as turfgrass, wildflower thatches and associated grasses are expected to be as effective in erosion control and contaminant absorption. Because thatches of wildflowers do not need fertilizers, pesticides, or herbicides, and watering is minimal, implementation of this practice may result in a cost savings (Brash et al., undated). In 1987, Howard County, Maryland, spent \$690.00 per acre to maintain turfgrass areas, compared to only \$31.00 per acre for wildflower meadows (Wilson, 1990).

A wildflower stand requires several years to become established; maintenance requirements are minimal once the area is established (Brash et al., undated).

5. Sediment Control Practices⁴

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Sediment controls capture sediment that is transported in runoff. Filtration and detention (gravitational settling) are the main processes used to remove sediment from urban runoff.

a. Sediment Basins

Sediment basins, also known as silt basins, are engineered impoundment structures that allow sediment to settle out of the urban runoff. They are installed prior to full-scale grading and remain in place until the disturbed portions of the drainage area are fully stabilized. They are generally located at the low point of sites, away from construction traffic, where they will be able to trap sediment-laden runoff.

Sediment basins are typically used for drainage areas between 5 and 100 acres. They can be classified as either temporary or permanent structures, depending on the length of service of the structure. If they are designed to function for less than 36 months, they are classified as "temporary"; otherwise, they are considered permanent structures. Temporary sediment basins can also be converted into permanent urban runoff management ponds. When sediment basins are designed as permanent structures, they must meet all standards for wet ponds.

b. Sediment Trap

Sediment traps are small impoundments that allow sediment to settle out of runoff water. Sediment traps are typically installed in a drainageway or other point of discharge from a disturbed area. Temporary diversions can be

⁴Adapted from Goldman (1986).

used to direct runoff to the sediment trap. Sediment traps should not be used for drainage areas greater than 5 acres and typically have a useful life of approximately 18 to 24 months.

■ c. Filter Fabric Fence

Filter fabric fence is available from many manufacturers and in several mesh sizes. Sediment is filtered out as urban runoff flows through the fabric. Such fences should be used only where there is sheet flow (i.e., no concentrated flow), and the maximum drainage area to the fence should be 0.5 acre or less per 100 feet of fence. Filter fabric fences have a useful life of approximately 6 to 12 months.

■ d. Straw Bale Barrier

A straw bale barrier is a row of anchored straw bales that detain and filter urban runoff. Straw bales are less effective than filter fabric, which can usually be used in place of straw bales. However, straw bales have been effectively used as temporary check dams in channels. As with filter fabric fences, straw bale barriers should be used only where there is sheet flow. The maximum drainage area to the barrier should be 0.25 acre or less per 100 feet of barrier. The useful life of straw bales is approximately 3 months.

■ e. Inlet Protection

Inlet protection consists of a barrier placed around a storm drain drop inlet, which traps sediment before it enters the storm sewer system. Filter fabric, straw bales, gravel, or sand bags are often used for inlet protection.

■ f. Construction Entrance

A construction entrance is a pad of gravel over filter cloth located where traffic leaves a construction site. As vehicles drive over the gravel, mud, and sediment are collected from the vehicles' wheels and offsite transport of sediment is reduced.

■ g. Vegetated Filter Strips

Vegetated filter strips are low-gradient vegetated areas that filter overland sheet flow. Runoff must be evenly distributed across the filter strip. Channelized flows decrease the effectiveness of filter strips. Level spreading devices are often used to distribute the runoff evenly across the strip (Dillaha et al., 1989).

Vegetated filter strips should have relatively low slopes and adequate length and should be planted with erosion-resistant plant species. The main factors that influence the removal efficiency are the vegetation type, soil infiltration rate, and flow depth and travel time. These factors are dependent on the contributing drainage area, slope of strip, degree and type of vegetative cover, and strip length. Maintenance requirements for vegetated filter strips include sediment removal and inspections to ensure that dense, vigorous vegetation is established and concentrated flows do not occur. Maintenance of these structures is discussed in Section II.A of this chapter.

6. Effectiveness and Cost Information

■ a. Erosion Control Practices

The effectiveness of erosion control practices can vary based on land slope, the size of the disturbed area, rainfall frequency and intensity, wind conditions, soil type, use of heavy machinery, length of time soils are exposed and unprotected, and other factors. In general, a system of erosion and sediment control practices can more effectively reduce offsite sediment transport than can a single system. Numerous nonstructural measures such as protecting natural or newly planted vegetation, minimizing the disturbance of vegetation on steep slopes and other highly

erodible areas, maximizing the distance eroded material must travel before reaching the drainage system, and locating roads away from sensitive areas may be used to reduce erosion.

Table 4-15 contains the available cost and effectiveness data for some of the erosion controls listed above. Information on the effectiveness of individual nonstructural controls was not available. All reported effectiveness data assume that controls are properly designed, constructed, and maintained. Costs have been broken down into annual capital costs, annual maintenance costs, and total annual costs (including annualization of the capital costs).

b. Sediment Control Practices

Regular inspection and maintenance are needed for most erosion control practices to remain effective. The effectiveness of sediment controls will depend on the size of the construction site and the nature of the runoff flows. Sediment basins are most appropriate for drainage areas of 5 acres or greater. In smaller areas with concentrated flows, silt traps may suffice. Where concentrated flow leaves the site and the drainage area is less than 0.5 ac/100 ft of flow, filter fabric fences may be effective. In areas where sheet flow leaves the site and the drainage area is greater than 0.5 acre/100 ft of flow, perimeter dikes may be used to divert the flow to a sediment trap or sediment basin. Urban runoff inlets may be protected using straw bales or diversions to filter or route runoff away from the inlets.

Table 4-16 describes the general cost and effectiveness of some common sediment control practices.

c. Comparisons

Figure 4-7 illustrates the estimated TSS loading reductions from Maryland construction sites possible using a combination of erosion and sediment controls in contrast to using only sediment controls. Figure 4-8 shows a comparison of the cost and effectiveness of various erosion control practices. As can be seen in Figure 4-8, seeding or seeding and mulching provide the highest levels of control at the lowest cost.

Table 4-15. ESC Quantitative Effectiveness and Cost Summary

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Sod	Immediate erosion protection where there is high erosion potential during vegetative establishment.	Average: 99% Observed range: 98% - 99% References: Minnesota Pollution Control Agency, 1988; Pennsylvania, 1983 cited in USEPA, 1991	2	Average: \$0.2 per ft ² [\$11,300 per acre] Range: \$0.1 - \$1.1 References: SWRPC, 1991; Schueler, 1987; Virginia, 1980	Average: 5% Range: 5% Reference: SWRPC, 1991	\$0.20 per ft ² \$7,500 per acre
Seed	Establish vegetation on disturbed area.	After vegetation established- Average: 90% Observed range: 50% - 100% References: SCS, 1985 cited in EPA, 1991; Minnesota Pollution Control Agency, 1989; Oberls, 1984 cited in City of Austin, 1988; Delaware Department of Natural Resources, 1989	2	Average: \$400 per acre Range: \$200 - \$1000 per acre References: Wisconsin DOT cited in SWRPC, 1991; Goldman, 1986; SWRPC, 1991; cited in SWRPC, 1991; Virginia, 1980	Average: 20% Range: 15% - 25% References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991	\$300 per acre
Seed and Mulch	Establish vegetation on disturbed area.	After vegetation established- Average: 90% Observed range: 50% - 100% References: SCS, 1985 cited in EPA, 1991; Minnesota Pollution Control Agency, 1989; Oberls, 1984 cited in City of Austin, 1988; Delaware Department of Natural Resources, 1989	2	Average: \$1,500 per acre Range: \$800 - \$3,500 per acre References: Goldman, 1986; Washington DOT, 1990; NC State, 1990; Schueler, 1987; Virginia, 1980; SWRPC, 1991	Average: NA ^b Range: NA References: None	\$1,100 per acre

Table 4-15. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Mulch	Temporary stabilization of disturbed area.	Observed range:	Straw mulch: 0.25	Straw mulch: Average: \$1,700 per acre Range: \$500 - \$5,000 per acre References: Wisconsin DOT cited in SWRPC, 1981; Washington DOT, 1980; Virginia, 1980	Average: NA ^b Range: NA References: None	Straw mulch: \$7,500 per acre
	Observed range: sand:	20% slope wood fiber @ 1500 lb/ac 50-60% wood fiber @ 3000 lb/ac 50-85% straw @ 3000 lb/ac 90-100%	50% slope 0-20% 50-70% 95%			
	Silt-loam:	20% slope wood fiber @ 1500 lb/ac 20-60% wood fiber @ 3000 lb/ac 60-90% straw @ 3000 lb/ac 80-95%	Wood fiber mulch: Average: \$1,000 per acre Range: \$100 - \$2,300 per acre References: Washington DOT, 1990; Virginia, 1980			Wood fiber mulch: \$3,500 per acre
	Silt-clay-loam:	10-30% slope wood fiber @ 1500 lb/ac 5% wood fiber @ 3000 lb/ac 40% jute netting 30-60% straw @ 3000 lb/ac 40-70% wood chips @ 10,000 lb/ac 60-80% mulch blanket 60-80% excelsior blanket 60-80% multiple treatment (straw and jute) 90%	30-50% slope jute netting: 0.33 30% 20-40% 50-60% 50-60% 50-80% 90% Straw and jute: 0.33	Jute netting: Average: \$3,700 per acre Range: \$3,500-\$4,100 per acre References: Washington DOT, 1990; Virginia, 1980 Straw and jute: Average: \$5,400 per acre Range: \$4,000-\$9,100 per acre References: Washington DOT, 1990; Virginia, 1980		Jute netting: \$12,500 per acre Straw and jute: \$18,000 per acre

References: Minnesota Pollution Control Agency, 1988; Kay, 1983 cited in Goldman, 1986

Table 4-15. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Terraces	Break up long or steep slopes.	Observed range: Land Slope 1-12% 12-18% 18-24% Reduction in Erosion 70% 60% 55%	2	Average: \$5 per lin ft Range: \$1 - \$12 References: SWRPC, 1991; Goldman, 1988; Virginia, 1991 SWRPC, 1991	Average: 20% Range: 20% Reference: SWRPC, 1991	\$4 per lin ft
All Erosion Controls	Reduce amount of sediment entering runoff.	Additionally, if the slope steepness is halved, while other factors are held constant, the soil loss potential decreases 2-1/2 times. If both the slope and length are halved, the soil loss potential is decreased 4 times. References: Goldman, 1988; Beasley, 1972	--	Varies but typically low	Varies but typically low	Varies but typically low

NA - Not available.

^a Useful life estimated as length of construction project (assumed to be 2 years).^b For Total Annual Cost, assume Annual Maintenance Cost = 2% of construction cost.

Table 4-16. ESC Quantitative Effectiveness and Cost Summary for Sediment Control Practices

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Sediment basin	Minimum drainage area = 5 acres, maximum drainage area = 100 acres	Average: 70% Observed range: 55% - 100% References: Schueler, 1990; Engle, BIV and Jarrett, AR, 1990; Baumann, 1990	2	Less than 50,000 ft ³ storage Average: \$0.60 per ft ³ storage (\$1,100 per drainage acre ^c) Range: \$0.20 - \$1.30 per ft ³ References: SWRPC, 1991	Average: 25% Range: 25% References: Denver COG cited in SWRPC, 1991; SWRPC, 1991	Less than 50,000 ft ³ storage \$0.40 per ft ³ storage \$700 per drainage acre ^b
				Greater than 50,000 ft ³ storage Average: \$0.3 per ft ³ storage (\$550 per drainage acre ^c) Range: \$0.10 - \$0.40 per ft ³ References: SWRPC, 1991		Greater than 50,000 ft ³ storage \$0.20 per ft ³ storage \$900 per drainage acre ^c
Sediment trap	Maximum drainage area = 5 acres	Average: 60% Observed range: (-7%) - 100% References: Schueler, et al., 1990; Tahoe Regional Planning Agency, 1989; Baumann, 1990	1.5	Average: \$0.60 per ft ³ storage (\$1,100 per drainage acre ^c) Range: \$0.20 - \$2.00 per ft ³ References: Denver COG cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986	Average: 20% Range: 20% References: Denver COG cited in SWRPC, 1991; SWRPC, 1991	\$0.70 per ft ³ storage \$1,300 per drainage acre ^c
Filter Fabric Fence	Maximum drainage area = 0.5 acre per 100 feet of fence. Not to be used in concentrated flow areas.	Average: 70% Observed range: 0% - 100% sand; 80% - 99% silt-loam; 50% - 80% silt-clay-loam; 0% - 20% References: Munson, 1991; Fisher et al., 1984; Minnesota Pollution Control Agency, 1989	0.5	Average: \$3 per lin ft (\$700 per drainage acre ^c) Range: \$1 - \$8 per lin ft References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986; Virginia, 1991; NC State, 1980	Average: 100% Range: 100% References: SWRPC, 1991	\$7 per lin ft \$850 per drainage acre ^c

Table 4-16. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Straw Bale Barrier	Maximum drainage area = 0.25 acre per 100 feet of barrier. Not to be used in concentrated flow areas.	Average: 70% Observed Range: 70% References: Virginia, 1980 cited in EPA, 1991	0.25	Average: \$4 per lin ft (\$1,800 per drainage acre) ^d Range: \$2 - \$6 per lin ft References: Goldman, 1986; Virginia, 1991	Average: 100% Range: 100% References: SWRPC, 1991	\$17 per lin ft \$8,800 per drainage acre ^d
Inlet Protection	Protect storm drain inlet.	Average: NA Observed Range: NA References: None	1	Average: \$100 per inlet Range: \$50 - \$150 References: SWRPC, 1991; Denver COG cited in SWRPC, 1991; Virginia, 1991; EPA cited in SWRPC, 1991	Average: 60% Range: 20% - 100% References: SWRPC, 1991; Denver COG cited in SWRPC, 1991	\$150 per inlet
Construction Entrance	Removes sediment from vehicles wheels.	Average: NA Observed Range: NA References: None	2	Average: \$2,000 each Range: \$1,000 - \$4,000 References: Goldman, 1986; NC State, 1990	Average: NA ^e Range: NA References: None	\$1,500 each
	With washrack:			Average: \$3,000 each Range: \$1,000 - \$5,000 References: Virginia, 1991		\$2,200 each

Table 4-16. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Vegetative Filter Strip	Must have sheet flow.	Average: 70% Observed Range: 20% - 80% References: Hayes and Hairston, 1983 cited in Casman, 1990; Dillaha et al., 1989, cited in Glick et al., 1991; Virginia Department of Conservation, 1987; Nonpoint Source Control Task Force, 1983 cited in Minnesota PCA, 1989; Schueler, 1987	2	Established from existing vegetation- Average: \$0 Range: \$0 References: Schueler, 1987 Established from sod- Average: \$11,300 per acre Range: \$4,500 - \$48,000 per acre References: Schueler, 1987; SWRPC, 1991	Average: NA Range: NA References: None	NA

NA - Not available. ;

^a Useful life estimated as length of construction project (assumed to be 2 years)^b For Total Annual Cost, assume Annual Maintenance Cost=20% of construction cost.^c Assumes trap volume = 1800 c/acre (0.5 inches runoff per acre).^d Assumes drainage area of 0.5 acre per 100 feet of fence (maximum allowed).^e Assumes drainage area of 0.25 acre per 100 feet of barrier (maximum allowed).

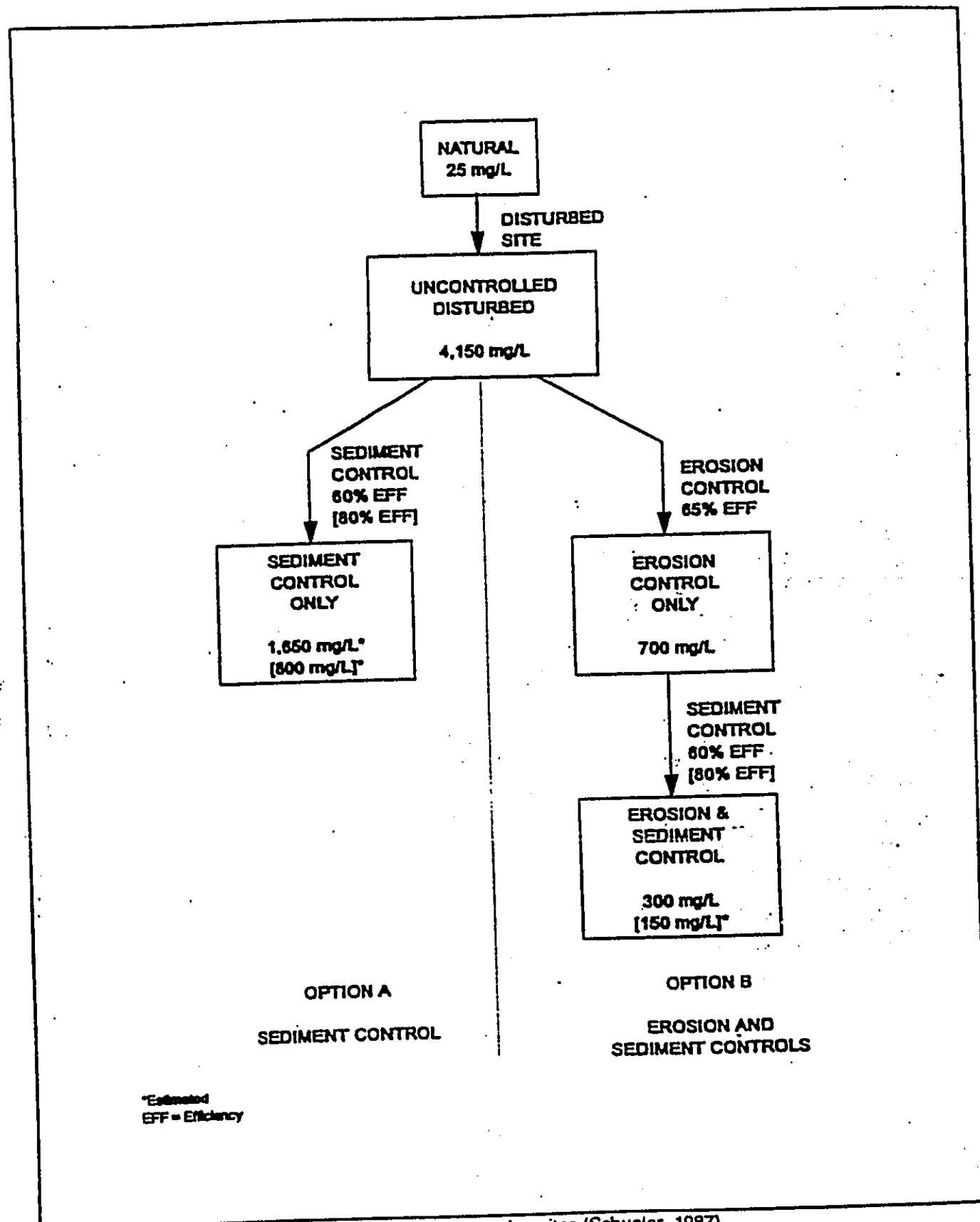


Figure 4-7. TSS concentrations from Maryland construction sites (Schueler, 1987).

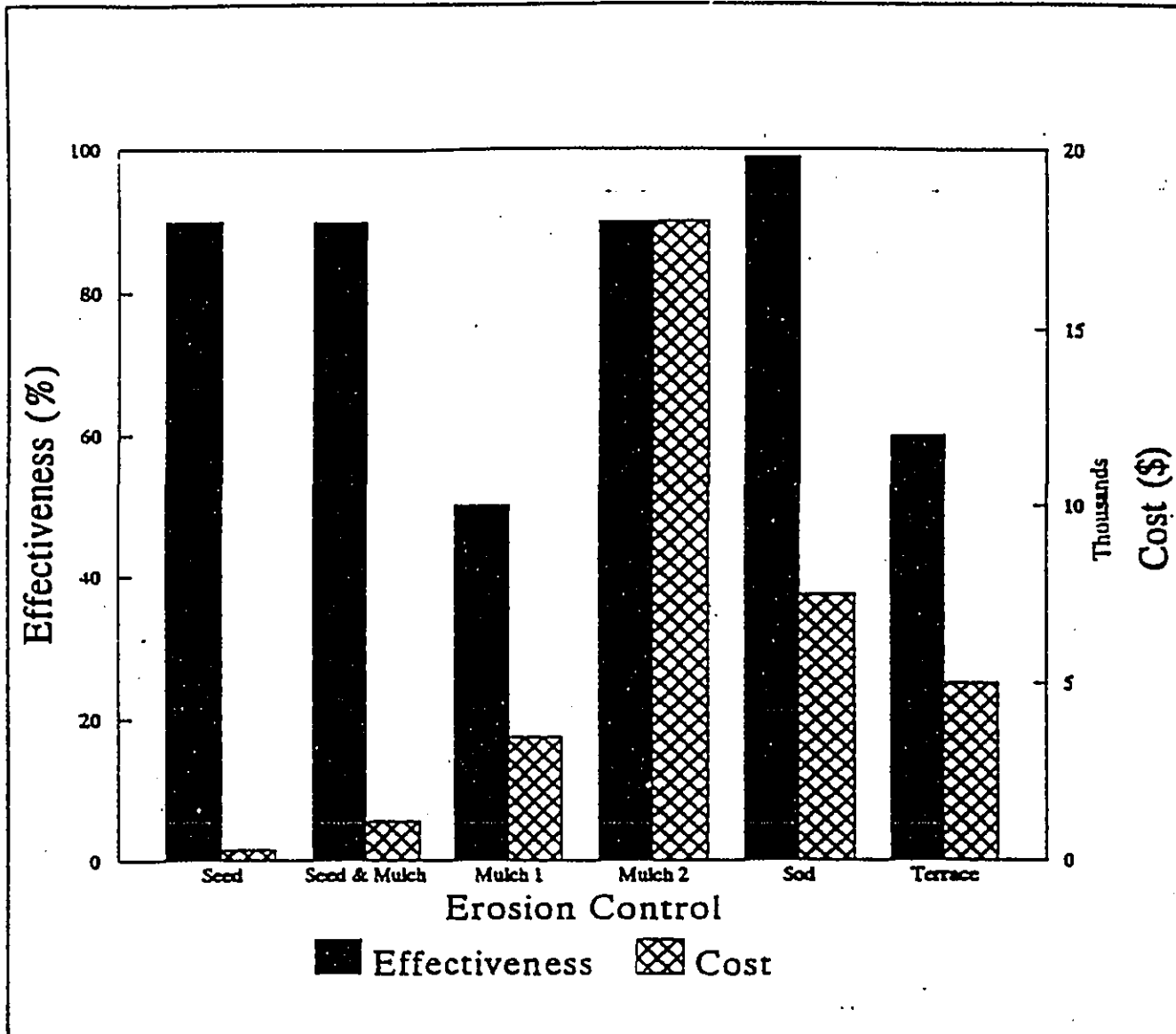


Figure 4-8. Comparison of cost and effectiveness for erosion control practices (based on information in Tables 4-15 and 4-16).

B. Construction Site Chemical Control Management Measure

- (1) Limit application, generation, and migration of toxic substances;
- (2) Ensure the proper storage and disposal of toxic materials; and
- (3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.

1. Applicability

This management measure is intended to be applied by States to all construction sites less than 5 acres in area and to new, resurfaced, restored, and reconstructed road, highway, and bridge construction projects. This management measure does not apply to: (1) construction of a detached single family home on a site of 1/2 acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. (NOTE: All construction activities, including clearing, grading, and excavation, that result in the disturbance of areas greater than or equal to 5 acres or are a part of a larger development plan are covered by the NPDES regulations and are thus excluded from these requirements.) Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformance with this management measure and will have flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The purpose of this management measure is to prevent the generation of nonpoint source pollution from construction sites due to improper handling and usage of nutrients and toxic substances, and to prevent the movement of toxic substances from the construction site.

Many potential pollutants other than sediment are associated with construction activities. These pollutants include pesticides (insecticides, fungicides, herbicides, and rodenticides); fertilizers used for vegetative stabilization; petrochemicals (oils, gasoline, and asphalt degreasers); construction chemicals such as concrete products, sealers, and paints; wash water associated with these products; paper, wood, garbage; and sanitary wastes (Washington State Department of Ecology, 1991).

The variety of pollutants present and the severity of their effects are dependent on a number of factors:

- (1) The nature of the construction activity. For example, potential pollution associated with fertilizer usage may be greater along a highway or at a housing development than it would be at a shopping center development because highways and housing developments usually have greater landscaping requirements.
- (2) The physical characteristics of the construction site. The majority of all pollutants generated at construction sites are carried to surface waters via runoff. Therefore, the factors affecting runoff volume,

such as the amount, intensity, and frequency of rainfall; soil infiltration rates; surface roughness; slope length and steepness; and area denuded, all contribute to pollutant loadings.

- (3) The proximity of surface waters to the nonpoint pollutant source. As the distance separating pollutant-generating activities from surface waters decreases, the likelihood of water quality impacts increases.

a. Pesticides

Insecticides, rodenticides, and herbicides are used on construction sites to provide safe and healthy conditions, reduce maintenance and fire hazards, and curb weeds and woody plants. Rodenticides are also used to control rodents attracted to construction sites. Common insecticides employed include synthetic, relatively water-insoluble chlorinated hydrocarbons, organophosphates, carbamates, and pyrethrins.

b. Petroleum Products

Petroleum products used during construction include fuels and lubricants for vehicles, for power tools, and for general equipment maintenance. Specific petroleum pollutants include gasoline, diesel oil, kerosene, lubricating oils, and grease. Asphalt paving also can be particularly harmful since it releases various oils for a considerable time period after application. Asphalt overloads might be dumped and covered without inspection. However, many of these pollutants adhere to soil particles and other surfaces and can therefore be more easily controlled.

c. Nutrients

Fertilizers are used on construction sites when revegetating graded or disturbed areas. Fertilizers contain nitrogen and phosphorus, which in large doses can adversely affect surface waters, causing eutrophication.

d. Solid Wastes

Solid wastes on construction sites are generated from trees and shrubs removed during land clearing and structure installation. Other wastes include wood and paper from packaging and building materials, scrap metals, sanitary wastes, rubber, plastic and glass, and masonry and asphalt products. Food containers, cigarette packages, leftover food, and aluminum foil also contribute solid wastes to the construction site.

e. Construction Chemicals

Chemical pollutants, such as paints, acids for cleaning masonry surfaces, cleaning solvents, asphalt products, soil additives used for stabilization, and concrete-curing compounds, may also be used on construction sites and carried in runoff.

f. Other Pollutants

Other pollutants, such as wash water from concrete mixers, acid and alkaline solutions from exposed soil or rock, and alkaline-forming natural elements, may also be present and contribute to nonpoint source pollution.

Revegetation of disturbed areas may require the use of fertilizers and pesticides, which, if not applied properly, may become nonpoint source pollutants. Many pesticides are restricted by Federal and/or State regulations.

Hydroseeding operations, in which seed, fertilizers, and lime are applied to the ground surface in a one-step operation, are more conducive to nutrient pollution than are the conventional seedbed-preparation operations, in which fertilizers and lime are tilled into the soil. Use of fertilizers containing little or no phosphorus may be required by

local authorities if the development is near sensitive waterbodies. The addition of lime can also affect the pH of sensitive waters, making them more alkaline.

Improper fueling and servicing of vehicles can lead to significant quantities of petroleum products being dumped onto the ground. These pollutants can then be washed off site in urban runoff, even when proper erosion and sediment controls are in place. Pollutants carried in solution in runoff water, or fixed with sediment crystalline structures, may not be adequately controlled by erosion and sediment control practices (Washington Department of Ecology, 1991). Oils, waxes, and water-insoluble pesticides can form surface films on water and solid particles. Oil films can also concentrate water-soluble insecticides. These pollutants can be nearly impossible to control once present in runoff other than by the use of very costly water-treatment facilities (Washington Department of Ecology, 1991).

After spill prevention, one of the best methods to control petroleum pollutants is to retain sediments containing oil on the construction site through use of erosion and sediment control practices. Improved maintenance and safe storage facilities will reduce the chance of contaminating a construction site. One of the greatest concerns related to use of petroleum products is the method for waste disposal. The dumping of petroleum product wastes into sewers and other drainage channels is illegal and could result in fines or job shutdown.

The primary control method for solid wastes is to provide adequate disposal facilities. Erosion and sediment control structures usually capture much of the solid waste from construction sites. Periodic removal of litter from these structures will reduce solid waste accumulations. Collected solid waste should be removed and disposed of at authorized disposal areas.

Improperly stored construction materials, such as pressure-treated lumber or solvents, may lead to leaching of toxics to surface water and ground water. Disposal of construction chemicals should follow all applicable State and local laws that may require disposal by a licensed waste management firm.

3. Management Measure Selection

This management measure was selected based on the potential for many construction activities to contribute to nutrient and toxic NPS pollution.

This management measure was selected because (1) construction activities have the potential to contribute to increased loadings of toxic substances and nutrients to waterbodies; (2) various States and local governments regulate the control of chemicals on construction sites through spill prevention plans, erosion and sediment control plans, or other administrative devices; (3) the practices described are commonly used and presented in a number of best management practice handbooks and guidance manuals for construction sites; and (4) the practices selected are the most economical and effective.

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

a. Properly store, handle, apply, and dispose of pesticides.

Pesticide storage areas on construction sites should be protected from the elements. Warning signs should be placed in areas recently sprayed or treated. Persons mixing and applying these chemicals should wear suitable protective clothing, in accordance with the law.

Application rates should conform to registered label directions. Disposal of excess pesticides and pesticide-related wastes should conform to registered label directions for the disposal and storage of pesticides and pesticide containers set forth in applicable Federal, State, and local regulations that govern their usage, handling, storage, and disposal. Pesticides and herbicides should be used only in conjunction with Integrated Pest Management (IPM) (see Chapter 2). Pesticides should be the tool of last resort; methods that are the least disruptive to the environment and human health should be used first.

Pesticides should be disposed of through either a licensed waste management firm or a treatment, storage, and disposal (TSD) facility. Containers should be triple-rinsed before disposal, and rinse waters should be reused as product.

Other practices include setting aside a locked storage area, tightly closing lids, storing in a cool, dry place, checking containers periodically for leaks or deterioration, maintaining a list of products in storage, using plastic sheeting to line the storage area, and notifying neighboring property owners prior to spraying.

b. Properly store, handle, use, and dispose of petroleum products.

When storing petroleum products, follow these guidelines:

- Create a shelter around the area with cover and wind protection;
- Line the storage area with a double layer of plastic sheeting or similar material;
- Create an impervious berm around the perimeter with a capacity 110 percent greater than that of the largest container;
- Clearly label all products;
- Keep tanks off the ground; and
- Keep lids securely fastened.

Oil and oily wastes such as crankcase oil, cans, rags, and paper dropped into oils and lubricants should be disposed of in proper receptacles or recycled. Waste oil for recycling should not be mixed with degreasers, solvents, antifreeze, or brake fluid.

c. Establish fuel and vehicle maintenance staging areas located away from all drainage courses, and design these areas to control runoff.

Proper maintenance of equipment and installation of proper stream crossings will further reduce pollution of water by these sources. Stream crossings should be minimized through proper planning of access roads. Refer to Chapter 3 for additional information on stream crossings.

d. Provide sanitary facilities for construction workers.

e. Store, cover, and isolate construction materials, including topsoil and chemicals, to prevent runoff of pollutants and contamination of ground water.

f. Develop and implement a spill prevention and control plan. Agencies, contractors, and other commercial entities that store, handle, or transport fuel, oil, or hazardous materials should develop a spill response plan.

Post spill procedure information and have persons trained in spill handling on site or on call at all times. Materials for cleaning up spills should be kept on site and easily available. Spills should be cleaned up immediately and the contaminated material properly disposed of. Spill control plan components should include:

- Stop the source of the spill.
- Contain any liquid.
- Cover the spill with absorbent material such as kitty litter or sawdust, but do not use straw. Dispose of the used absorbent properly.

■ *g. Maintain and wash equipment and machinery in confined areas specifically designed to control runoff.*

Thinners or solvents should not be discharged into sanitary or storm sewer systems when cleaning machinery. Use alternative methods for cleaning larger equipment parts, such as high-pressure, high-temperature water washes, or steam cleaning. Equipment-washing detergents can be used, and wash water may be discharged into sanitary sewers if solids are removed from the solution first. (This practice should be verified with the local sewer authority.) Small parts can be cleaned with degreasing solvents, which can then be reused or recycled. Do not discharge any solvents into sewers.

Washout from concrete trucks should be disposed of into:

- A designated area that will later be backfilled;
- An area where the concrete wash can harden, can be broken up, and then can be placed in a dumpster; or
- A location not subject to urban runoff and more than 50 feet away from a storm drain, open ditch, or surface water.

Never dump washout into a sanitary sewer or storm drain, or onto soil or pavement that carries urban runoff.

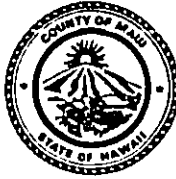
■ *h. Develop and implement nutrient management plans.*

Properly time applications, and work fertilizers and liming materials into the soil to depths of 4 to 6 inches. Using soil tests to determine specific nutrient needs at the site can greatly decrease the amount of nutrients applied.

■ *i. Provide adequate disposal facilities for solid waste, including excess asphalt, produced during construction.*

■ *j. Educate construction workers about proper materials handling and spill response procedures. Distribute or post informational material regarding chemical control.*

ALAN M. ARAKAWA
MAYOR



MAY 25 2004

CARL M. KAUPALOLO
CHIEF

NEAL A. BAL
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE AND PUBLIC SAFETY

200 DAIRY ROAD
KAHULUI, MAUI, HAWAII 96732
(808) 270-7561
FAX (808) 270-7919

May 19, 2004

Michi Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Subject: County of Maui's Hana Landfill Land Acquisition

Dear Michi Hirano,

I would like to thank you for the opportunity to comment on the above subject. After consultation with fire captains at the Hana Fire Station, I have listed their concerns. They would like to see the following topics addressed with the existing as well as the proposed property.

1. Water supply for fire protection is non existent
2. Emergency accessability to many areas of the landfill are poor.
3. Dry brush continues to encroach on many areas of the property.
4. A fire break needs to be created around the facility.
5. Tire storage shall comply with 1103.3.6 of the 1997 Uniform Fire Code

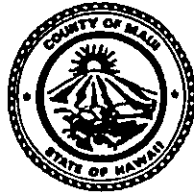
Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in cursive script, reading "Valeriano F. Martin".

Valeriano F. Martin
Captain
Fire Prevention Bureau

CHARMAINE TAVARES
Mayor
MILTON M. ARAKAWA, A.I.C.P.
Director
MICHAEL M. MIYAMOTO
Deputy Director



**COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration
DAVID TAYLOR, P.E.
Wastewater Reclamation Division
CARY YAMASHITA, P.E.
Engineering Division
TRACY N. TAKAMINE, P.E.
Solid Waste Division
BRIAN HASHIRO, P.E.
Highways Division

May 4, 2007

Captain Valeriano F. Martin
Department of Fire and Public Safety
County of Maui
200 Dairy Road
Kahului, Hawaii 96732

**SUBJECT: COUNTY OF MAUI'S HANA LANDFILL LAND ACQUISITION DRAFT
ENVIRONMENTAL ASSESSMENT**

Dear Captain Martin:

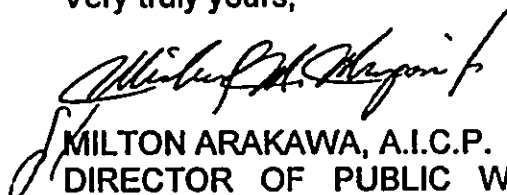
Thank you for your letter of May 19, 2004, providing comments on the draft EA on the subject project. We would like to provide the following information in response to your comments.

1. We acknowledge your comment that water supply for fire protection is non existent. The closest County waterline is located approximately 750 feet from the landfill site. The cost to extend the waterline to provide fire flow protection to the site is prohibitive.
2. The Department of Public Works and Environmental Management (DPWEM), Solid Waste Division will be removing the bulk of the scrap metal from the site. This will improve accessibility around the scrap metal storage area. Your comments will be forwarded to the DPWEM, Solid Waste Division for action.
3. Your comments on the encroachment of dry brush, need for a fire break around the active areas of the facility, are noted and will be to the DPWEM, Solid Waste Division for further review.

Captain Valeriano F. Martin
May 4, 2007
Page 2

Thank you again for your comments. A copy of the Draft EA will be forwarded to your Department for further review and comments.

Very truly yours,


MILTON ARAKAWA, A.I.C.P.
DIRECTOR OF PUBLIC WORKS AND
ENVIRONMENTAL MANAGEMENT

MA

cc: Elaine Baker, County of Maui, Department of Public Works and Environmental
Management
Mich Hirano, Munekiyo & Hiraga, Inc.

F:\DATA\COMDPWHana\FResponse Letters to Agencies from DPWEM\Letter to MFD.wpd

JOHN BLUMER-BUELL
S.R. 111, HANA, MAUI, HAWAII 96713
PHONE AND FAX 808-248-8972
EMAIL blubue@aol.com

April 20, 2004

John Harder, Solid Waste Division Chief
Maui County Public Works Department
200 South High Street
Wailuku, Maui, Hawaii 96793

Sent Via Fax to 270-7955(phone confirmation of receipt) and Certified U.S. Mail

Subject: Hana Landfill, Draft Environmental Assessment (DEA) Comments for the
"County of Maui's Hana Landfill Land Acquisition"

Aloha Mr. Harder,

These comments are coming in at the end of the comment period. I regret that I only became aware of this proposal two days ago while looking for another government report at the Hana Library.

The Hana landfill is an important issue and has been an issue discussed in the community over the years. I addressed the County Council Budget Committee last month in Hana regarding my concerns of the vertical growth of the Hana landfill. Since the issue is more complicated than one can address in four minutes at a public meeting with very limited time, I told the budget committee I would also submit my concerns to the County Council Public Works Committee. So, these comments will be forwarded to the council and mayor. Hopefully, the issues can be constructively addressed before any public hearings for permits. I am trying to help resolve these issues, and would rather be for a good plan than against a bad one.

At one point, the Hana Community Association wrote the County of Maui Public Works Department regarding concerns of the vertical growth of the landfill. A written response was not received, although both Charles Jenks and David Goode, former public works employees, verbally gave me a response which is discussed later in this letter.

I want to clarify with emphasis that these comments are in no way a negative report of our Hana Public Works Department. The Hana employees do a good job. I am questioning the lack of comprehensive information supplied in the DEA.

I want to state clearly that I oppose the proposed land acquisition at the present time. When accurate and complete information regarding the Hana landfill is supplied, I think the proposed land acquisition may be part of an improved and long term mitigation plan.

It is unlikely that a proposal like the Hana landfill would be approved at its current site by today's standards. This is a good time to resolve the current problems and look carefully to the future. Thank you for your consideration.

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A comprehensive and accurate overview of the situation at the Hana Landfill is simply not offered in the Draft Environmental Assessment. I request that the Maui County Public Works Department to provide additional information in the environmental assessment (EA);

D) An important and integral part of the Hana Landfill operation is the County of Maui cinder mining operation on Hawaii State land above Kaeleku. There is no mention of this mining operation in the EA. Information on the mining operation needs to be supplied as part of the baseline information of this EA. Please supply the following information regarding the mining operation;

- a) A copy of the lease between the County and State.
- b) A copy of the EA or EIS on which the lease is based.

I have been told several times over the years by State Land agents, including Phil Ota, that there is no EA or EIS report regarding the mining operation. And, no lease agreement between the County and State. This is an appropriate time to document this information. I called the State today to try and obtain the latest information. I was told that the mining operation is "something we need to work on".

- c) A copy of accounting reports showing funds generated from the mining operation.

One concern I have heard over the years is that the Office of Hawaiian Affairs is entitled to a percentage of the revenues generated by the thousands of yards of mined cinders. Has that entitlement been paid?

- d) What actual dollar amount and percentage of the Hana Public Works budget is spent on the mining and transporting of cinders to the Hana landfill?

Please include wages, initial cost of machines, maintenance of machines and fuel costs of machines. The costs of mining and transporting the cinders are clearly a large use of resources.

- e) Please include an assessment of possible environmental degradation resulting from the mining operation including;

- * Comments from owners of land in Kaeleku who have been impacted by drainage and erosion issues resulting from this operation.
- * Information documenting the spread of cinder possibly infested with miconia seed at the Hana landfill and throughout the Hana Community Plan District. The mining operation is in one of the most heavily miconia infested areas of

Page 3

Hawaii. I have seen miconia seeds sprout more than ten years after the spread of cinders from miconia infested areas.

- * Information documenting possible cinder runoff into the ocean and possible degradation of the reefs.

- * Documentation of visual degradation of the area, including aerial photographs and photos taken from the Hana Highway.

- * Information on possible future economic, environmental and cultural impacts from the distribution of the cinders throughout the Hana District.

f) Cultural Resources Inventory of surrounding area and immediate site of mining operation. Identify cultural impacts from the complete destruction of the immediate mining area.

g) How many cubic yards of cinders/materials have been mined?

II) An important part of the EA needs to be a discussion of the current height of landfill and mitigating measures. This is very relevant to the discussion. The EA discusses a horizontal expansion of the landfill, but does not discuss the vertical expansion of the landfill. Charles Jenks and David Goode both former directors of the Maui Public Works Department told me that the height of the landfill would remain "at grade". It now appears that parts of the landfill are 20-40 feet over grade. As part of the height discussion, please address the following:

a) What are the federal, state and county laws regarding vertical expansion of the landfill? I request that a mitigation measure of returning the landfill to grade be discussed.

b) Under Scenic and Open Space Resources, page 45, please consider, that the landfill is already in violation of B, which states, "Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline". The landfill is a growing visual impact can already be seen from one of the most important cultural sites in Hana, Ka'uiki. It threatens to become very visible from the Hana Ranch subdivision above Hana Bay. The landfill is a large development.

III) An important part of the EA needs to be a discussion of the future of the Hana Landfill. Please address the following:

a) What are the limits of the Hana landfill?

Some of the comments indicate this could be a permanently expanding site, without due consideration of existing laws, possible new laws and environmental concerns. What is the projected growth of the dump?

b) Is there a plan for future sewage treatment at the landfill site?

Page 4

Sewage treatment around Hana Bay is a very important issue. About fifteen years ago, the Hana landfill site was discussed as a possible location for a sewage treatment facility.

c) What is the long term plan for the Hana landfill?

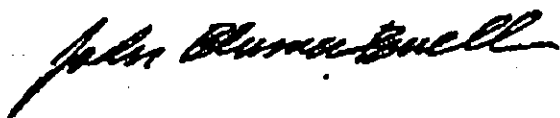
Is there a park or recreation use planned for the future. What are the laws regarding this type of "reclamation"? Does an expansion of the landfill ever trigger a full Environmental Impact Statement?

d) What is the cost of a "satellite" dump for Hana?

e) What additional information would be supplied if there were a full Environment Impact Statement provided?

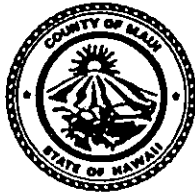
Please put me on your mailing list for any information regarding this proposal.

Sincerely yours,



cc: County of Maui, Mayor and County Council

CHARMAINE TAVARES
Mayor
MILTON M. ARAKAWA, A.I.C.P.
Director
MICHAEL M. MIYAMOTO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
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CARY YAMASHITA, P.E.
Engineering Division
TRACY N. TAKAMINE, P.E.
Solid Waste Division
BRIAN HASHIRO, P.E.
Highways Division

May 4, 2007

John Blumer-Buell
S.R. 111
Hana, Hawai'i 96713

SUBJECT: COUNTY OF MAUI'S HANA LANDFILL AND LAND ACQUISITION DRAFT
REVISED ENVIRONMENTAL ASSESSMENT

Dear Mr. Blumer-Buell:

Thank you for your letter of April 20, 2004 providing comments on the Draft Environmental Assessment of the subject projects. The following information is provided in response to your comments. The responses are provided in the same order as your comment letter.

1. It is noted in the Draft Revised EA that the daily cover for the landfill is provided by offsite sources. The environmental assessment was prepared in the context requirements set forth in the Title 200 of Chapter 11, Hawai'i Administrative Rules relating to Environmental Impact Statements. Since the content requirements do not reference lease arrangements and financial records, relating to the internal source for the coverage material are outside the scope of the assessment.
2. Based on the R. M. Towill assessment of the public infrastructure system in the County (2002), the Hana Landfill receives approximately four (4) tons of municipal solid waste (MSW) per day and has capacity to the year 2050. The remote location of the landfill site and distance from surrounding residences, mitigates the vertical height of the landfill.

Permitted land uses and development standards are set out in Chapter 19 of the Maui County Code. Landfills are permitted under Special Use Permit in the Agricultural district. There are no height restrictions for landfills in the Maui County Code.

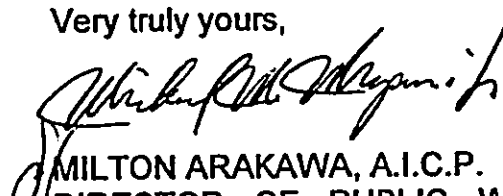
John Blumer-Buell
May 4, 2007
Page 2

In reply to comments on open space resources, the landfill site is not a new development, but one which has served the community of Hana, Keanae, Nahiku, Kipahulu and Kaupo since 1969. The land acquisition and realignment of the landfill boundaries are to incorporate an approximate 4.5-acre encroachment area on northwest boundary of the landfill, groundwater monitoring wells and methane gas probes, a 100 ft. by 100 ft. storm water runoff detention basin. The remainder of the 41.5-acre acquisition area will provide a buffer zone for the landfill. The actual active portions of the landfill will not be expanded.

3. See Item No. 2, in response to your comments on the future capacity of the landfill.
4. The County does not have plans for future sewage treatment facility at the landfill site.
5. The Draft Revised EA is prepared pursuant to Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules. Accordingly, the document addresses the landfill operation's technical characteristics, environmental impacts and alternatives, and advances finding and conclusions relative to the significance of the proposed action. The Draft Revised EA anticipates a Finding of No Significant Impact (FONSI).

Again thank you for your comments.

Very truly yours,


MILTON ARAKAWA, A.I.C.P.
DIRECTOR OF PUBLIC WORKS AND
ENVIRONMENTAL MANAGEMENT

MA

cc: Elaine Baker, County of Maui, Department of Public Works and Environmental Management

Mich Hirano, Munekiyo & Hiraga, Inc.

F:\DATA\COMDPWHana\LFResponse Letters to Agencies from DPWEM\Letter to John Blumer Buell.wpd

REFERENCES

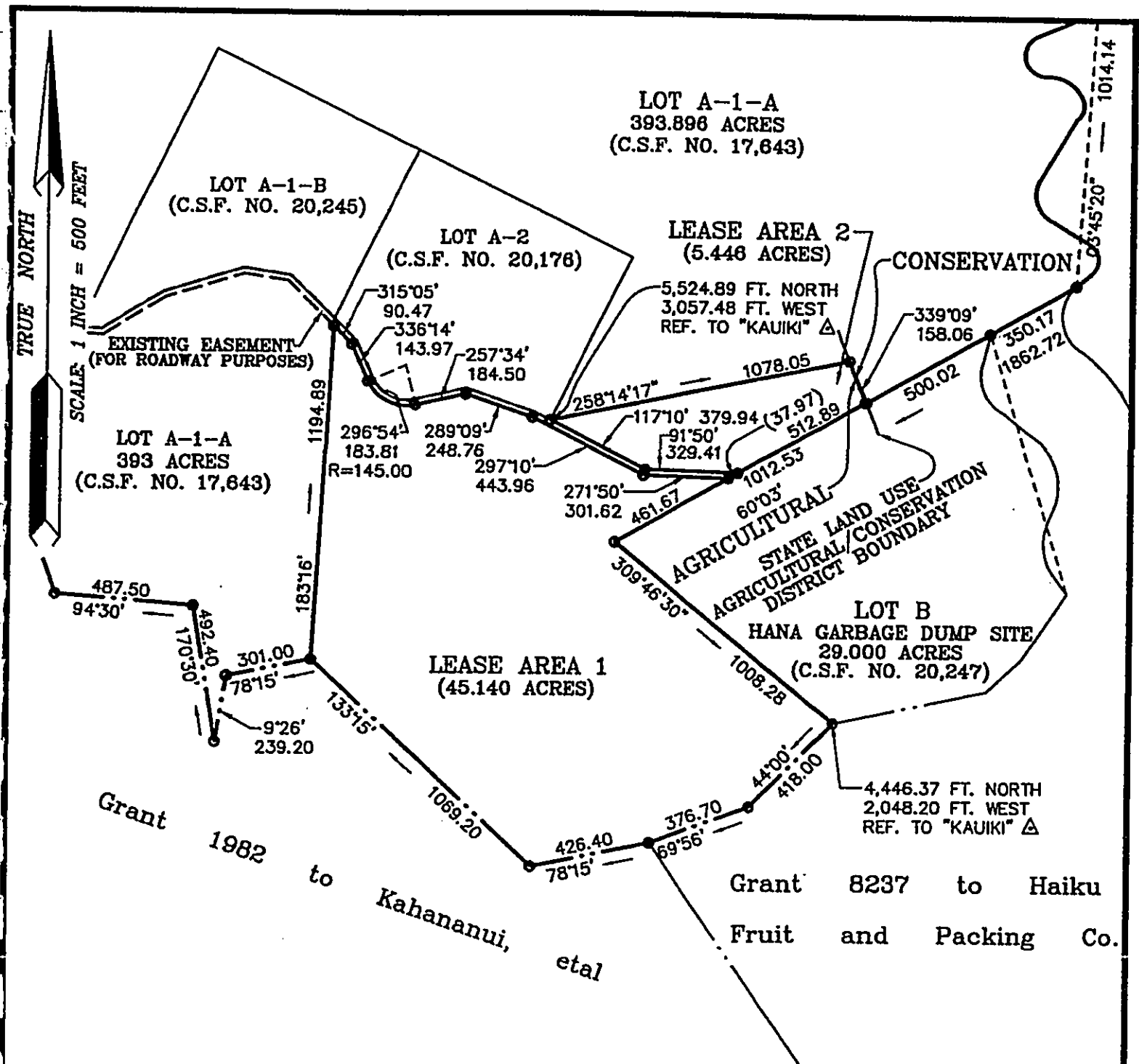
REFERENCES

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- Sterling, Elspeth, Sites of Maui, Bishop Museum Press, Honolulu 1998. February 18, 2003.
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- U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawai'i, in cooperation with the University of Hawai'i, Agricultural Experiment Station, August 1972.
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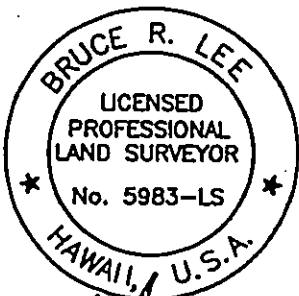
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APPENDIX A.

Survey, Metes and Bounds Description of Land Acquisition Area



REVISED: JANUARY 13, 2004



Bruce R. Lee
THIS PLAT WAS PREPARED BY ME OR
UNDER MY DIRECT SUPERVISION.

PLAT SHOWING
LEASE AREA 1 AND 2 AFFECTING LOT A-1-A
OF THE GOVERNMENT LANDS OF KAWAIPAPA AND WAKIU
IN FAVOR OF LOT B HANA GARBAGE DUMP SITE
SITUATED AT KAWAIPAPA & WAKIU, HANA, MAUI, HAWAII

PREPARED FOR:
COUNTY OF MAUI
SOLID WASTE DIVISION
200 S. HIGH STREET, 4TH FLOOR
WAILUKU, HI 96793

PREPARED BY:
NEWCOMER - LEE
LAND SURVEYORS, INC.
1498 LOWER MAIN STREET, SUITE D,
WAILUKU, MAUI, HAWAII 96793

T.M.K.:(2) 1-3-008: POR. 007 SCALE: 1 INCH = 500 FEET DATE: MARCH 24, 2003 SHT. 2 OF 2 SHTS.

8.5"x11"

DWG NO. 584001A (10) JOB NO. 03-5840

**DESCRIPTION
LEASE AREA 2
(FOR MATERIAL STORAGE/RECYCLING STAGING AREA)
AFFECTING LOT A-1-A OF THE
GOVERNMENT LANDS OF KAWAIPAPA AND WAKIU (C.S.F. No. 17,643)**

All of that certain parcel of land, being Lease Area 2 (for Material Storage/Recycling Staging Area) over, under and across a portion of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) in favor of the County of Maui, situated at Kawaipapa and Wakiu, Hana, Island and County of Maui, State of Hawai'i and being more particularly described as follows:

Beginning at the West corner of this parcel of land, said point also being the South corner of Lot A-2 (C.S.F. 20,176) of said Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643), the coordinates of said point of beginning referred to Government Survey Triangulation Station "KAUIKI" being:

5,524.89 Feet North
3,057.48 Feet West

and running by azimuths measured clockwise from True South:

- | | | | |
|----|--------------|---------|--|
| 1. | 258° 14' 17" | 1078.05 | feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643); |
| 2. | 339° 09' | 158.06 | feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) to a point on the Northwesterly boundary of Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643); |
| 3. | 60° 03' | 512.89 | feet along said Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643); |
| 4. | 91° 50' | 329.41 | feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643); |
| 5. | 117° 10' | 379.94 | feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) to the point of beginning and containing an area of 5.446 Acres, more or less. |

**DESCRIPTION
LEASE AREA 1
(FOR MATERIAL STORAGE/RECYCLING STAGING AREA)
AFFECTING LOT A-1-A OF THE
GOVERNMENT LANDS OF KAWAIPAPA AND WAKIU (C.S.F. No. 17,643)**

All of that certain parcel of land, being Lease Area 1 (for Material Storage/Recycling Staging Area) over, under and across a portion of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) in favor of the County of Maui, situated at Kawaipapa and Wakiu, Hana, Island and County of Maui, State of Hawai'i and being more particularly described as follows:

Beginning at the most Easterly corner of this parcel of land, on the Northwesterly boundary of Grant 8237 to Haiku Fruit and Packing Co., said point also being the South corner of Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643), the coordinates of said point of beginning referred to Government Survey Triangulation Station "KAUIKI" being:

4,446.37 Feet North
2,048.20 Feet West

and running by azimuths measured clockwise from True South:

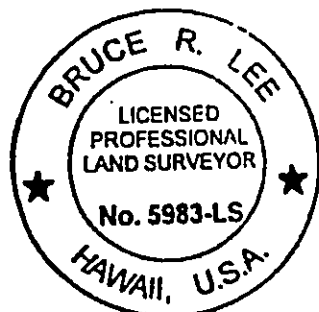
- | | | | |
|----|----------|---------|---|
| 1. | 44° 00' | 418.00 | feet along Grant 8237 to Haiku Fruit and Packing Co.; |
| 2. | 69° 56' | 376.70 | feet along Grant 8237 to Haiku Fruit and Packing Co.; |
| 3. | 78° 15' | 426.40 | feet along Grant 1982 to Kahananui et al.; |
| 4. | 133° 15' | 1069.20 | feet along Grant 1982 to Kahananui et al.; |
| 5. | 183° 16' | 1194.89 | feet along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643); |
| 6. | 315° 05' | 90.47 | feet along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643); |
| 7. | 336° 14' | 143.97 | feet along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643); |

Thence along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) on the arc of a curve to the left, concave Northeasterly with a radius of 145.00 feet, the chord azimuth and distance being:

8. 296° 54' 183.81 feet;
9. 257° 34' 184.50 feet along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
10. 289° 09' 248.76 feet along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
11. 297° 10' 443.96 feet along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
12. 271° 50' 301.62 feet along the remainder of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) to a point on the Northwesterly boundary of Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Land of Kawaipapa and Wakiu;
13. 60° 03' 461.67 feet along Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
14. 309° 46' 30" 1008.28 feet along Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) to the point of beginning and containing an area of 45.140 Acres, more or less.

Prepared by:

NEWCOMER-LEE
LAND SURVEYORS, INC., a Hawaii Corporation



This description was prepared by me or
under my supervision.

Bruce R. Lee 04/04

BRUCE R. LEE

Licensed Professional Land
Surveyor Certificate No. 5983-LS

3/22/03
COM WASTE/HANA LANDFILL
File 03-5840
DI: 5840-COM SWD-Hana Landfill Lease 1

**DESCRIPTION
LEASE AREA 2
(FOR MATERIAL STORAGE/RECYCLING STAGING AREA)
AFFECTING LOT A-1-A OF THE
GOVERNMENT LANDS OF KAWAIPAPA AND WAKIU (C.S.F. No. 17,643)**

All of that certain parcel of land, being Lease Area 2 (for Material Storage/Recycling Staging Area) over, under and across a portion of Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) in favor of the County of Maui, situated at Kawaipapa and Wakiu, Hana, Island and County of Maui, State of Hawai'i and being more particularly described as follows:

Beginning at the West corner of this parcel of land, said point also being the South corner of Lot A-2 (C.S.F. 20,176) of said Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643), the coordinates of said point of beginning referred to Government Survey Triangulation Station "KAUIKI" being:

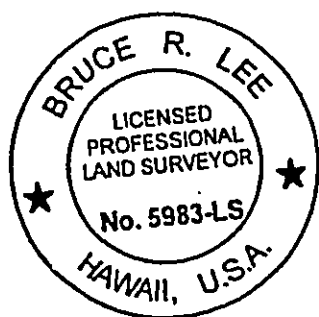
5,524.89 Feet North
3,057.48 Feet West

and running by azimuths measured clockwise from True South:

1. 258° 14' 17" 1078.05 feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
2. 339° 09' 158.06 feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) to a point on the Northwesterly boundary of Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
3. 60° 03' 512.89 feet along said Lot B (Hana Garbage Dump Site – C.S.F. 20,247) of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
4. 91° 50' 329.41 feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643);
5. 117° 10' 379.94 feet along the remainder of said Lot A-1-A of the Government Lands of Kawaipapa and Wakiu (C.S.F. No. 17,643) to the point of beginning and containing an area of 5.446 Acres, more or less.

Prepared by:

**NEWCOMER-LEE
LAND SURVEYORS, INC., a Hawaii Corporation**



This description was prepared by me or
under my supervision.

Bruce R. Lee 02/18/04

BRUCE R. LEE
Licensed Professional Land
Surveyor Certificate No. 5983-LS

REVISED: 2/18/04
COM WASTE/HANA LANDFILL
File 03-5840
D1: 5840-COM SWD-Hana Landfill Lease 2

APPENDIX B.

Department of Land and Natural Resources Right-of- Entry

JUL 10 1921

WASTE MANAGEMENT DIV
COUNTY OF ALBU

DIVISIONS:
AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

P. O. BOX 1049
WAILUKU, HAWAII 96793

STATE PARKS
WATER AND LAND

NAME _____
COUNTY _____
CITY _____

Monte ~~_____~~

24 24

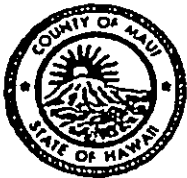
7/10

Eddie Ansa
EDDIE ANSAI
District Land Agent

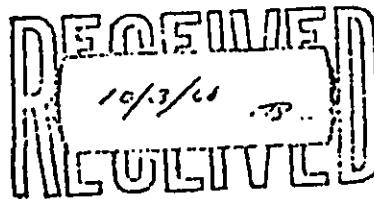
cc: Mr. James J. Detor

Waste Management Division	Info	Action	See file	File	Cover
Ed K.					
Alden S.					
<i>Rosen</i>					
Alden H.					
Zimmerman					
Manning					
McDonald					
Kipke W. J.					
Leland W. J.					

File No. 1.25



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
WAILUKU, MAUI, HAWAII
October 2, 1968



Mr. James Shaw
Land Agent
State of Hawaii
Wailuku, Hawaii


Dear Mr. Shaw:

Re: Proposed Hana Garbage Dump Site
TMK: 1-3-06-7

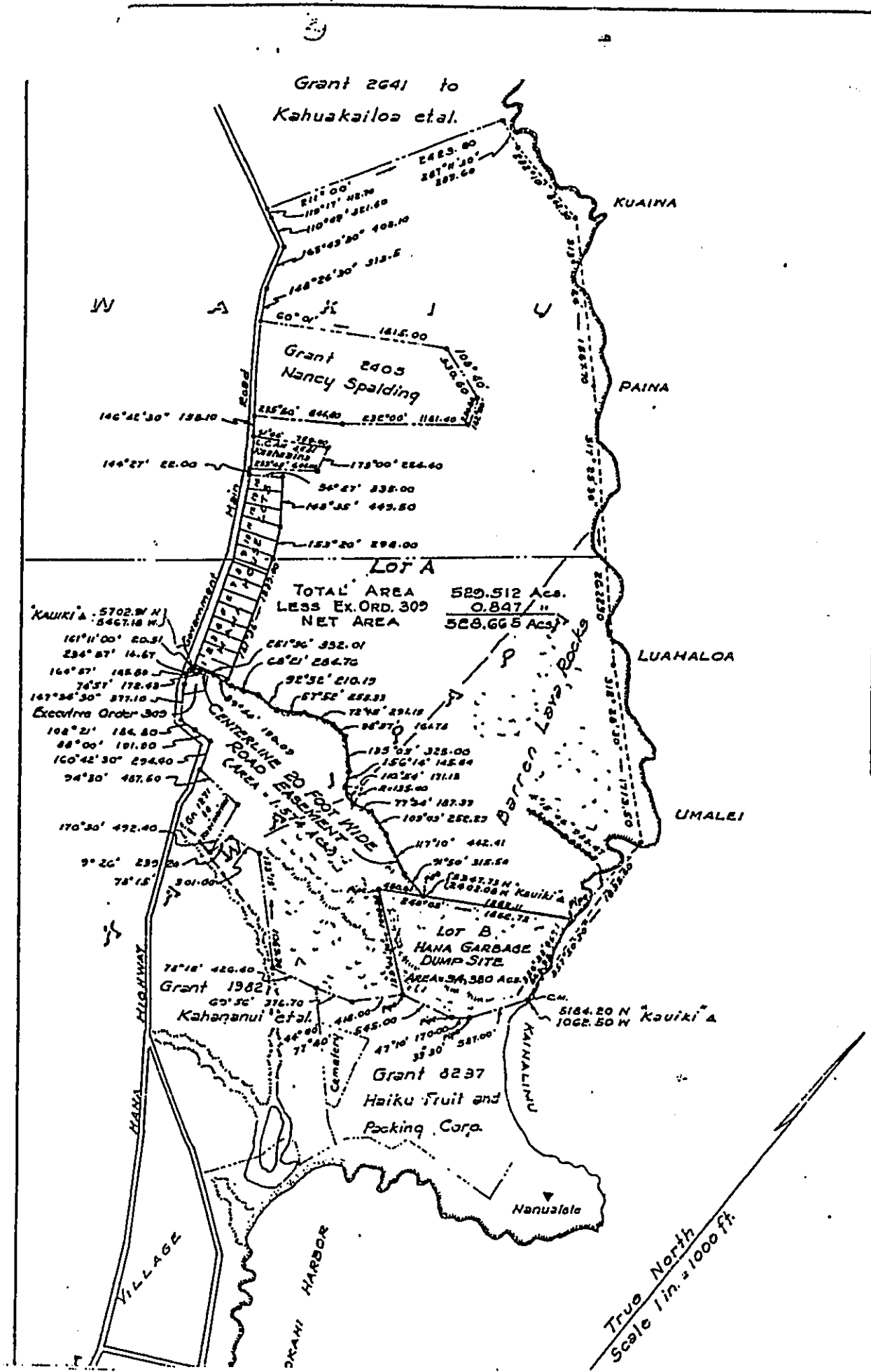
Enclosed please find three prints of the proposed Hana Garbage Dump Site containing an area of 34.380 acres and the centerline 20-ft. wide road easement. The easement will serve as access road from Hana Highway to the proposed Hana Garbage Dump Site.

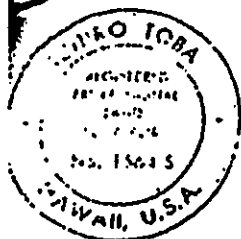
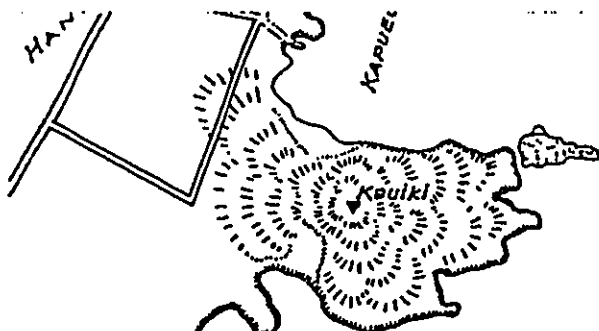
Please make the necessary arrangements as previously discussed with Mr. Apoliana so that we can use this area to dispose garbage for the Hana District.

Very truly yours,


MASAO SONE
County Engineer

Encls.





COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
WAILUKU, MAUI, HAWAII

HANA GARBAGE DUMP SITE

Portions of the Government Lands of Kawaipapa and
Wakiu into Lots A and B
KAWAIPAPA, WAKIU, HANA, MAUI, HAWAII

Scale 1 in. = 1000 ft.

July 22, 1968

Prepared By: Achieo Toba 1564-S
Land Surveyor & Right of Way Agent

Under Direction of: M. J. Jones 670-ES
County Engineer

* Map Key: 1-3-66-7

1471

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HONOLULU, HAWAII
Division of Land Management

March 14, 1969

Board of Land and
Natural Resources
Honolulu, Hawaii

MAUI

Gentlemen:

Subject: Request of County of Maui for Use of State
Land at Hana, Maui for Garbage Dump Site

The County of Maui Department of Public Works has recently requested that the State make available some 29.054 acres of State land at Hana, Maui for a garbage dump site to serve the Hana District, along with a 20 ft. wide road easement thereto.

There is a definite need for a dump site in the area. Heretofore, the County has been utilizing land owned by Hana Ranch, Inc. for a garbage dump but has been asked to look elsewhere for a dump site. The area in question, shown outlined in red on the map labeled Land Board Exhibit "A" adjoins the present County dump site and comprises a rather sizable depression in what is otherwise a barren lava flow. The subject area is some distance away from any residential area.

In the course of discussion with the County, it was suggested that it consider a sanitary land-fill operation. However, such an operation would be impractical from the County's standpoint for the reason that there is no suitable fill material available to the County within a reasonable distance of the site and in sufficient quantity to provide for such and operation.

The proposed dump site is located within an area under General Lease No. 3294 to Mr. John A. Medeiros Jr., which is included in a sublease to Mr. Erik Krag. General Lease No. 3294 expires May 9, 1970. Mr. Medeiros has consented to issuance of a right-of-entry by this office to the County of Maui covering the subject area and to use of the 20 ft. wide road easement by the County for ingress and egress to the dump site.

RECOMMENDATION:

That the Board authorize issuance of a right-of-entry to the County of Maui covering the subject area and 20 ft. wide road easement thereto and permission to utilize such area for a refuse/

Approved by the Board
at its meeting held on

3/14/69

ITEM F-9

Board of Land and
Natural Resources

-2-

March 14, 1969

garbage dump, subject to the following conditions:

1. The County shall, prior to vacating the premises, spread a final cover of inert granular material mixed with earth over all refuse, such cover material to be relatively free of organic matter, low in clay content and free of rock larger than six (6) inches in diameter.
2. Minimum depth of final cover shall be two (2) feet of properly compacted cover material.
3. The finished ground shall be properly graded to provide for uniform settlement and to minimize problems of surface runoff and erosion. The Department of Land and Natural Resources will determine the finished grade.
4. Septic tank sludge, flammable liquids and animal carcasses of all kinds shall not be disposed of in this area.
5. Appropriate chemicals shall be sprayed on the surface of the refuse when necessary to control flies, roaches, and rodents.
6. The County shall coordinate all dumping operations with the Department of Health and shall abide by their rules and regulations.
7. The County shall exercise due care to protect the area from view from Hana Highway and any nearby urban and/or recreation development.
8. The County shall defend, indemnify and hold harmless the State of Hawaii against any loss, liability, claim or demand for damage or injury, including but not limited to interest in or to claims for property damage, personal injury or death arising out of any activity by the County, its agents or representatives, under this right-of-entry.
9. Other terms and conditions as may be prescribed by the Chairman.

Respectfully submitted

[Signature]
JAMES I. DETON
Deputy Administrator
Division of Land Management

RECOMMENDED FOR APPROVAL:

[Signature]
SUNAO KIDO, Chairman

APPENDIX C.

**State of Hawai'i Executive
Order No. 3304**

Executive Order No. 3004

Setting Aside Land for Public Purposes

By this Executive Order, I, the undersigned, Governor of the State of Hawaii, by virtue of the authority in me vested by Section 171-11, Hawaii Revised Statutes, and every other authority me hereunto enabling, do hereby order that the public land hereinafter described be, and the same is, hereby set aside for the following public purposes:

FOR HANA GARBAGE DUMP SITE, to be under the control and management of the County of Maui, a body corporate and politic of the State of Hawaii, being all of the lands situate at Kawaipapa, Hana, Maui, Hawaii, containing an area of 29.0 acres, more or less, TOGETHER WITH an easement for "roadway purposes", containing an area of 1.735 acres, more or less, all more particularly described in Exhibit "A" and delineated on Exhibit "B", both of which are attached hereto and made parts hereof, said exhibits being, respectively, a survey description and survey map prepared by the Survey Division, Department of Accounting and General Services, State of Hawaii, both being designated C.S.F. No. 20,247 and dated August 21, 1985.

SUBJECT to the disapproval by the Legislature by two-thirds vote of either the Senate or the House of Representatives or by majority vote of both, in any regular or special session next following the date of this Executive Order.

In Witness Whereof, I have hereunto set my hand and caused the Great Seal of the State of Hawaii to be affixed.
Done at the Capitol at Honolulu this 16th day of November, Nineteen Hundred and 85

George Ariyoshi
Governor of the State of Hawaii

Approved as to form:

David L. Wilson
Deputy Attorney General

Dated: August 30, 1985



STATE OF HAWAII
SURVEY DIVISION
DEPT. OF ACCOUNTING AND GENERAL SERVICES
HONOLULU

C.S.P. No. 20,247

August 12, 1985

HANA GARBAGE DUMP SITE

Kawaipapa, Hana, Maui, Hawaii

Being portion of the Government Land of Kawaipapa.

Beginning at the west corner of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "KAUIKI" being 5091.44 feet North and 2823.13 feet West, thence running by azimuths measured clockwise from True South:-

1. 240° 03' 1512.55 feet along Lot A-1-A of the Government Land of Kawaipapa to a point 250.00 feet west from highwater mark at seashore;
2. Thence along the remainder of the Government Land of Kawaipapa, 250.00 west and parallel to highwater mark at seashore, the direct azimuth and distance being:
343° 14' 970.13 feet;
3. 33° 30' 287.00 feet along Grant 8237 to Haiku Fruit and Packing Company;
4. 47° 10' 170.00 feet along Grant 8237 to Haiku Fruit and Packing Company;
5. 77° 40' 545.00 feet along Grant 8237 to Haiku Fruit and Packing Company;
6. 129° 46' 30" 1008.28 feet along Lot A-1-A of the Government Land of Kawaipapa to the point of beginning and containing an AREA OF 29.0 ACRES, MORE OR LESS.

Together with a Road Easement as shown on plan attached hereto and made a part hereof and more particularly described as follows:-

C.S.P. No. 20,247

August 12, 1985

Being a portion of Lot A-1-A of the Government Land of Kawaipapa.

Beginning at the northwest corner of this easement and on the easterly side of Hana Highway, the coordinates of said point of beginning referred to Government Survey Triangulation Station "KAUHIKI" being 5709.82 feet North and 5471.35 feet West, thence running by azimuths measured clockwise from True South:-

1. 251° 36' 135.67 feet along Grant 12,987 to Yoshimi Uchiyama and Agnes Kaiwi Uchiyama;
2. 269° 54' 260.30 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa;
3. 248° 21' 254.01 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa;
4. 272° 32' 209.21 feet along the remainder of Lot A-1-A and along Lot A-1-B of the Government Land of Kawaipapa;
5. 237° 52' 256.52 feet along Lot A-1-B of the Government Land of Kawaipapa;
6. 252° 45' 294.75 feet along Lot A-1-B of the Government Land of Kawaipapa;
7. 278° 37' 167.37 feet along Lot A-1-B of the Government Land of Kawaipapa;
8. 315° 05' 330.16 feet along Lots A-1-B and A-2 of the Government Land of Kawaipapa;
9. 336° 14' 147.71 feet along Lot A-2 of the Government Land of Kawaipapa;
10. Thence along Lot A-2 of the Government Land of Kawaipapa on a curve to the left with a radius of 125.00 feet, the chord azimuth and distance being:
296° 54' 158.46 feet;
11. 257° 34' 190.16 feet along Lot A-2 of the Government Land of Kawaipapa;
12. 289° 09' 233.82 feet along Lot A-2 of the Government Land of Kawaipapa;

C.L.P. No. 20,247

August 12, 1985

- | | | |
|-----|--|---|
| 13. | 297° 10' | 440.86 feet along Lot A-2 and the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 14. | 271° 50' | 329.39 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 15. | 60° 03' | 37.97 feet along Hana Garbage Dump Site; |
| 16. | 91° 50' | 301.61 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 17. | 117° 10' | 443.96 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 18. | 109° 09' | 248.76 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 19. | 77° 34' | 184.50 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 20. | Thence along the remainder of Lot A-1-A of the Government Land of Kawaipapa on a curve to the right with a radius of 145.00 feet, the chord azimuth and distance being:
116° 54' 183.81 feet; | |
| 21. | 156° 14' | 143.97 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 22. | 135° 05' | 101.46 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 23. | 25° 39' | 4.24 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 24. | 135° 05' | 218.47 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 25. | 98° 37' | 153.95 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |
| 26. | 72° 45' | 286.10 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa; |

C.S.F. No. 20,247

August 12, 1985

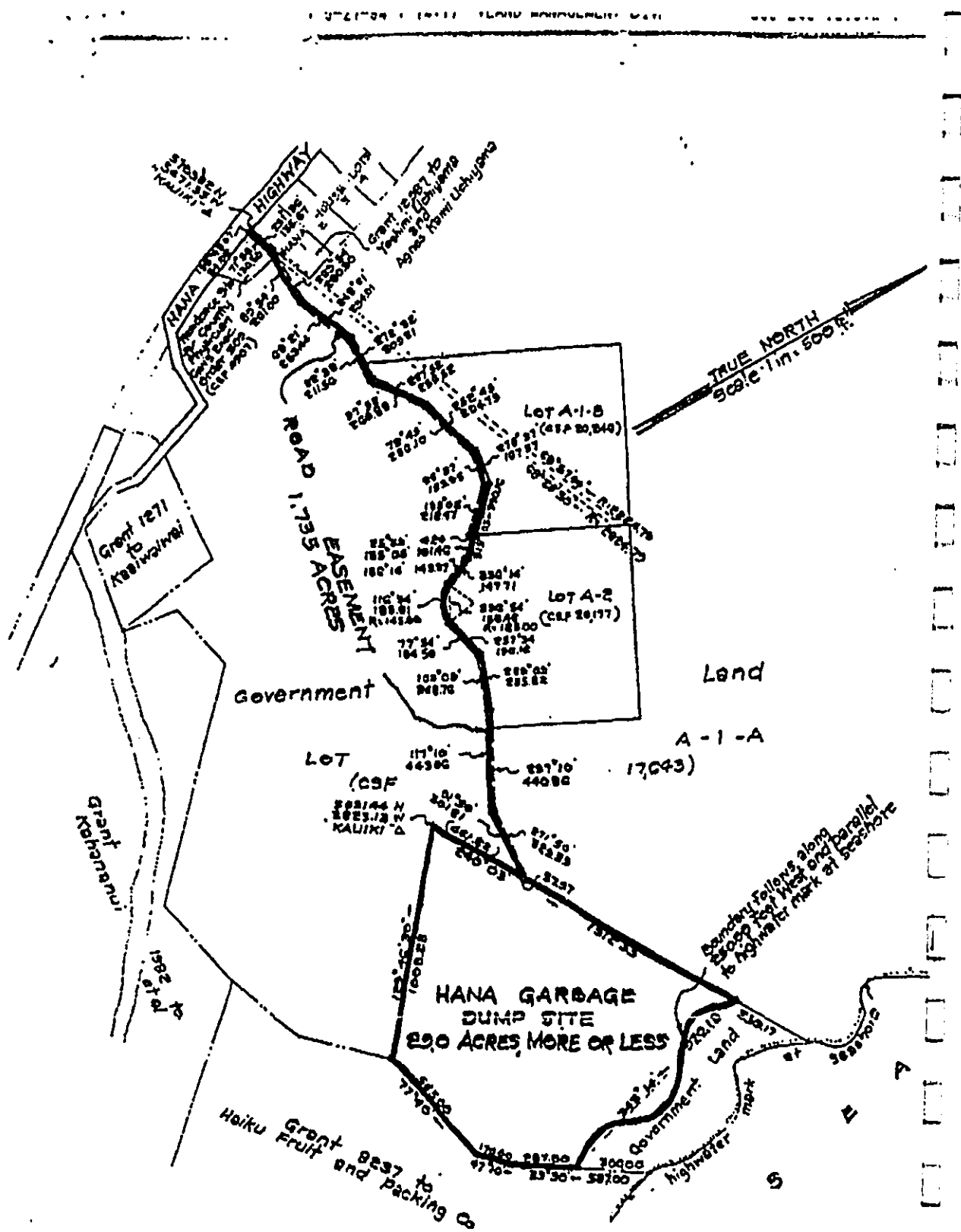
27. 37° 52' 260.88 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa;
28. 92° 32' 211.56 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa;
29. 68° 21' 253.44 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa;
30. 89° 54' 261.00 feet along the remainder of Lot A-1-A of the Government Land of Kawaipapa and along Residence Site for County Physician, Governor's Executive Order 309;
31. 71° 36' 130.59 feet along Residence Site for County Physician, Governor's Executive Order 309;
32. Thence along the easterly side of Hana Highway on a curve to the right with a radius of 2824.79 feet, the chord azimuth and distance being:
158° 43' 07" 24.02 feet
to the point of beginning and containing an AREA OF 1.735 ACRES.

SURVEY DIVISION
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
STATE OF HAWAII

By: Stanley T. Hasegawa
Stanley T. Hasegawa
Land Surveyor

pt

Compiled from map furn. by
County of Maui, CSF 17,643,
20,177 and other Govt.
Survey Records.



HANA GARBAGE DUMP SITE
Kawaipapa, Maui, Hawaii
Scale: 1 inch = 500 feet

Ma-296(85)
sk Hasegawa 10/1/26

MAP 1-3-00

L.P. No. 20,247

SURVEY DIVISION
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
STATE OF HAWAII

EXHIBIT 408

STH. Aug. 12, 191

APPENDIX D.

**URS Corporation Semi-
Annual Groundwater
Monitoring Report,
September 2006**



**Semi-Annual Groundwater
Monitoring Report
January 2007
Hana Landfill**

March 28, 2007



March 28, 2007

Mr. Steven Y.K. Chang, P.E.
State of Hawaii Department of Health
Solid and Hazardous Waste Branch
919 Ala Moana Blvd., Room 212
Honolulu, Hawaii 96814

**Subject: Semi-Annual Groundwater Monitoring Report
 January 2007
 Hana Landfill**


Dear Mr. Chang:

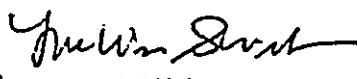
URS Corporation (URS) is pleased to submit the attached report to the State of Hawaii Department of Health. The report presents data collected by URS during the January 2007 groundwater sampling event conducted under the Detection Monitoring Program for the Hana Landfill. Tasks completed included sample collection from HL-1 through HL-3, analysis of groundwater samples from the three wells for the Detection Monitoring Program monitoring parameters, evaluation of the monitoring data, and preparation of this report.

None of the monitoring parameters were found outside of the statistical control limits established for each well. During the site monitoring event, no visual signs were observed indicative of a release from the landfill to groundwater. URS recommends semi-annual monitoring be continued in accordance with the Hana Landfill Detection Monitoring Program. The next semi-annual monitoring event is scheduled to take place in July 2007.

If you have any questions regarding the information in this report or require additional information, please contact us at 593.1116.

Sincerely,
URS Corporation


Vincent Pereda
Project Manager


For Debra Stiffel
Senior Geologist

c: Ms. Elaine Baker, County of Maui Department of Public Works and Waste Management
 (3 copies)

URS Corporation
615 Piikoi Street, Suite 900
Honolulu, HI 96814-3141
Tel: 808.593.1116
Fax: 808.593.1198

(07HON-018.doc: 26536733.00003)

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LIST OF ABBREVIATIONS AND ACRONYMS

BES	Brewer Environmental Services
COC	chain-of-custody
CUSUM	cumulative summary
DLNR	Department of Land and Natural Resources (State of Hawaii)
DOH	Department of Health (State of Hawaii)
ft/ft	vertical foot per horizontal foot
i	gradient
k	hydraulic conductivity
Maui County	County of Maui, Department of Public Works and Waste Management
mg/L	milligrams per liter
msl	mean sea level
n	porosity
NOAA	National Oceanic & Atmospheric Administration
QA/QC	quality assurance/quality control
site	Hana Landfill
TDS	total dissolved solids
TOC	total organic carbon
URS	URS Corporation
U.S. EPA	United States Environmental Protection Agency
V	velocity
VOA	volatile organic analysis
VOC	volatile organic compound

1.0 INTRODUCTION

The County of Maui, Department of Public Works and Waste Management (Maui County) contracted with URS Corporation (URS) to conduct semi-annual groundwater monitoring at the Hana Landfill (site) in accordance with the Detection Monitoring Program. The baseline data collected for the site are discussed in the *County of Maui Department of Public Works Baseline Report, Hana Landfill, Hana, Maui, Hawaii* (Brewer Environmental Services [BES], 1999). The Detection Monitoring Program for the site is conducted in accordance with the *State of Hawaii Landfill Groundwater Monitoring Guidance Document* (State of Hawaii Department of Health [DOH], 2002).

Monitoring wells HL-1, HL-2, and HL-3 were sampled during 11 distinct sampling events, as part of the Baseline Monitoring Program from April 1993 through January 1999. The three wells have since been monitored as part of the Detection Monitoring Program on a semi-annual basis from August 2000 to the present.

The purpose of this report is to describe the January 2007 semi-annual monitoring activities (sampling, chemical analysis, and data evaluation) conducted in accordance with the Hana Landfill Detection Monitoring Program. URS prepared this report for submittal by Maui County to the DOH to document the groundwater monitoring performed at the site.

2.0 SITE LOCATION AND DESCRIPTION

The Hana Landfill is located off Waikoloa Road on the eastern slope of Haleakala on the island of Maui (Figure 1). The landfill is located approximately 2.5 miles southeast of Hana Airport and is in the vicinity of the Hana High and Elementary Schools to the north, a cemetery and Hana Bay to the south, the Hana Medical Center and Helani Botanical Gardens to the west, and the Pacific Ocean to the east.

The site ranges in elevation from approximately 20 to 60 feet above mean sea level (msl). The natural topography has been highly modified in the immediate area of the landfill by the current landfill operations.

Monitoring well HL-1 is located in the western corner of the landfill, well HL-2 is in the eastern portion of the landfill within Area 2, and well HL-3 is located off Waikoloa Road near the southern boundary of the landfill (Figure 2).

3.0 GEOLOGIC AND HYDROGEOLOGIC SETTING

Maui was formed by the constructs of two large volcanoes, the older West Maui and the younger East Maui (Haleakala) volcanoes. The isthmus is composed principally of recent lithified to non-lithified, calcareous sand dunes deposited in the backshore and nearshore marine environments, intercalated with unconsolidated alluvial sediments derived from erosion of the volcanoes, and deposited in a terrestrial environment. Underlying these sediments are lavas erupted from Haleakala and West Maui. The bulk of the Haleakala shield was built during the late Pliocene and early Pleistocene eras by thinly bedded basaltic lava flows consisting of a'a and pahoehoe of the Honomaunu Volcanic Series. Overlying the older Honomaunu volcanics are the more massive, thick-bedded andesite lava flows of the Kula Volcanic Series. Typically the Kula basaltic andesite consists of thinly to thickly bedded a'a and pahoehoe type flows (Stearns and Macdonald, 1942).

The United States Department of Agriculture Soil Conservation Service (1972) has mapped the landfill area as geologically recent a'a lava flows. A typical a'a flow is characterized by jagged, clinkery basalt at the surface, grading to highly welded, fine- to coarse-grained basalt at depth. Groundwater flow in a'a sequences predominantly follows the clinkery surface of each flow and vertically migrates through cooling fractures.

Climatological conditions at the site and surrounding areas consist of warm to moderate temperatures, low to moderate rainfall, and moderately windy conditions. Average annual temperatures range from the low 60s to the high 80s degrees Fahrenheit. On Maui the rainfall pattern is dominated by the effect of the two volcanic peaks. The majority of the rainfall occurs between November and April. Typically, December and January are the wettest months of the year and June is the driest month. The site is windward of the prevailing east to northeasterly trade winds. During the winter months the wind pattern is interrupted by southerly to southwesterly Kona winds.

Drought is a chronic and troublesome problem in Hawaii, which has at one time affected virtually every part of the state (Department of Land and Natural Resources [DLNR], 1991). Drought impacts many elements of the environment, including air temperature, stream flow, soil moisture, and groundwater.

The pan evaporation rate at the site is expected to be less than 70 inches per year, however there is no measuring station directly in Hana (DLNR, 1985). The *Rainfall Atlas of Hawaii* (DLNR, 1986)

shows that the Hana area receives between 59 to 79 inches of rainfall per year, so that rainfall and evaporation are fairly balanced.

Mink and Lau (1990) report that basal groundwater underneath the landfill occurs in the Honomaunu formations and an effective sedimentary caprock is absent at the coast in this area. The aquifer beneath the landfill is part of the Kawaipapa System of the Hana Sector. The Kawaipapa System is characterized by one aquifer classified as basal (fresh water in contact with sea water), unconfined (where water table is the upper surface of saturated aquifer), and flank (horizontally extensive lavas). The aquifer contains fresh water (less than 250 milligrams per liter [mg/L] chloride), is highly vulnerable to contamination, is irreplaceable, and is currently being used for drinking water purposes (Mink and Lau, 1990).

Although aquifer as a whole is classified as being used for drinking water, the groundwater beneath the landfill is oceanward of the underground injection control line. The average depth to the water table within the Hana Landfill boundary is between approximately 40 and 100 feet below ground surface. This extreme variation is due to topography from both natural landforms and anthropogenic impacts. Groundwater elevations vary from approximately one to two feet above msl (Figure 2).

4.0 BASELINE GROUNDWATER MONITORING

Brown and Caldwell installed monitoring wells HL-1 through HL-3 in the basal, unconfined, volcanic aquifer in 1993. Wells HL-1, HL-2, and HL-3 were monitored during 11 sampling events as part of the Baseline Monitoring Program from April 1993 through January 1999.

The intention of the baseline monitoring was to provide groundwater data to approximate the true range of ambient concentrations of targeted compounds in the groundwater system being monitored (DOH, 2002). The baseline data were used to establish the intrawell statistical Control Limits for each monitoring parameter, calculated using the Shewhart-cumulative summation (CUSUM) method. The mean of replicate values is computed and plotted with upper (and possibly lower) predetermined limits on a chart where the x-axis represents time. If a result falls outside of these boundaries, then the monitoring well (i.e., process) is declared to be "out-of-control." The data collected during the baseline monitoring period are summarized in Tables 1, 2, and 3.

Data from the 11 groundwater baseline sampling events were used to establish the Shewhart-CUSUM control limits for each parameter at each well for use during the Detection Monitoring Program (BES, 1999). The control limits will be recalculated after the last sampling event of every

fifth year and will include non-outlier data collected during the Detection Monitoring Program. The current control limits for wells HL-1 through HL-3 are shown in Tables 1 through 3.

5.0 JANUARY 2007 DETECTION GROUNDWATER MONITORING

On January 17, 2007, URS conducted the semi-annual groundwater monitoring of all three wells (HL-1 through HL-3) included in the Detection Monitoring Program. Utilizing well survey data provided by the Maui County and potentiometric groundwater measurements, HL-1 appears to be in the crossgradient direction, HL-2 appears to be in the upgradient direction, and HL-3 appears to be in the downgradient direction (Figure 2).

The objective of the Detection Monitoring Program is to evaluate groundwater quality within the entire current area of the Hana Landfill. Possible impacts to the groundwater from the landfill are monitored by the field and laboratory parameters in the Detection Monitoring Program.

5.1 Groundwater Gradient and Velocity

Prior to purging of the monitoring wells, the depth to the static groundwater level in each well was measured with an accuracy of 0.01 feet using an electronic water level meter. URS' field crew measured water levels in all wells within a twenty-minute time period to minimize tidal influence. Purging and sampling activities were performed after the synoptic water level survey task. The dates and times of the groundwater elevation measurements taken prior to purging activities are as follows:

Well	Measurement Date	Measurement Time	Surveyed Elevation (feet)	Static Water Depth (feet)	Groundwater Surface Elevation (feet)
HL-1	1/17/07	1138	92.86	91.96	0.90
HL-2	1/17/07	1119	36.44	34.78	1.66
HL-3	1/17/07	1129	50.86	50.20	0.66

¹ County of Maui Department of Public Works and Environmental Management Solid Waste Division *Advertisement for Proposals, Semi-Annual Groundwater Monitoring Services, Hana Landfill, Hana, Maui, Job. No. SW-04-3*, dated May 9, 2004.

The static water depth was subtracted from the surveyed well head elevation to yield the groundwater surface elevation at each well. Groundwater potentiometric surface elevation data are plotted on Figure 2.

The January 2007 data indicate a groundwater gradient beneath the site of 0.0016 vertical foot per horizontal foot (ft/ft) with groundwater flowing generally to the southwest. This gradient is comparable to data collected for the 2004 through July 2006 monitoring events.

Groundwater velocity is estimated by application of Darcy's Law, as follows:

$$V = \frac{ki}{n}$$

V = velocity;

k = hydraulic conductivity;

i = gradient; and

n = porosity.

The hydraulic conductivity at the site has not been measured but can be estimated based on lithology. Mink and Lau (1980) have reported typical values for hydraulic conductivity of 1,200 feet per day for the highly permeable aquifer. The aquifer underneath the site is tidally influenced, with groundwater predominantly flowing to the south-southwest, interrupted by short-lived episodes to the northwest (BES, 1999).

Values for porosity are unknown, but can be estimated based on aquifer characteristics. A typical value for porosity is estimated to be in the range of 0.15 for fractured porous, basaltic rock (Mink and Lau, 1980). Using these values for the hydraulic conductivity, porosity, and the estimated gradient of 0.0016 ft/ft yields a Darcy velocity of 13.05 feet per day. This value is considered within the range of acceptable values for groundwater flow through fractured porous, basaltic rock.

5.2 Groundwater Sampling Procedures

Prior to sampling, each well was purged of a minimum of three well casing volumes. To prevent cross contamination, new disposable polyethylene bailers were used at each well to collect the groundwater samples. During well purging the water quality field parameters (temperature, specific conductivity, pH, turbidity, salinity, and dissolved oxygen) were measured and recorded in the field notes (Appendix A). Purging continued until turbidity, temperature, specific conductivity, and pH reached relative stabilization, in which the final three consecutive values were within 10 percent of the previous measurement. The final values recorded prior to sampling are summarized in Tables 1 through 3, and are included in the monitoring parameter tables for each well. Investigation derived purge water was discharged to the ground surface for onsite evaporation.

Water samples were collected for analysis as described below:

- Water to be analyzed for volatile organic compounds (VOCs) was collected in three volatile organic analysis (VOA) 0.04-liter vials containing hydrochloric acid as a preservative. The VOA vials were completely filled such that a positive meniscus formed on top of the vial. A plastic cover fitted with a convex Teflon septum was then placed over the top of the vial and the sample vials were inverted and tapped in the field to confirm that no entrapped air bubbles were present in the samples.
- Water to be analyzed for total organic carbon (TOC) was filtered through an in-line 0.45-micron "aqua-prep" filter and was collected in a 0.25-liter glass amber bottle containing sulfuric acid as a preservative.
- Water for dissolved metals analysis was filtered through an in-line 0.45-micron "aqua-prep" filter and was collected in a 0.25-liter plastic bottle containing nitric acid as a preservative.
- Water for total dissolved solids (TDS), chloride, and sulfate was collected in an unpreserved 1-liter plastic bottle.
- Water for inorganic alkalinity was collected in an unpreserved 0.25-liter glass amber bottle.
- Water for ammonia as nitrogen was collected in a 0.25-liter plastic bottle containing sulfuric acid as a preservative.

Samples were labeled, placed immediately in a cooler with ice, and transported to Oahu by sampling personnel. The samples were taken to Test America Laboratory, Inc. in Aiea for analytical testing. All samples were transported to the laboratory under appropriate chain-of-custody (COC) procedures. The COC procedures consisted of labeling the samples and filling out a COC record with the following information: sampler's initials, sample number, sample date and time collected, preservation method, number of sample containers and chemical analyses to be conducted. A copy of the COC record is included in Appendix B. The analytical groundwater samples were collected in the following order:

- VOCs to be analyzed using the United States Environmental Protection Agency (U.S. EPA) Method 8260.
- Chloride to be analyzed using U.S. EPA Method E375.4.
- Sulfate to be analyzed using U.S. EPA Method E350.2.
- Ammonia as Nitrogen to be analyzed using U.S. EPA Method E350.3.
- Total alkalinity to be analyzed using U.S. EPA Method 2320B.
- TDS to be analyzed using U.S. EPA Method E160.1.
- TOC to be analyzed using U.S. EPA Method E415.1.
- Metals to be analyzed using U.S. EPA Method 6010B.

6.0 RESULTS OF INVESTIGATION

The results of the laboratory analyses are summarized in Tables 1 through 3. The data tables show the intrawell statistical control limits established for each monitoring parameter. The laboratory reports and COC documentation are included as Appendix B. Graphs of monitoring parameter results over time are included as Appendix C. The following discussion summarizes the January 2007 groundwater monitoring results.

6.1 Field Parameters

Field parameters included temperature, specific conductivity, pH, turbidity, salinity, and dissolved oxygen and are shown on the cumulative data summary tables (Tables 1 through 3) and monitoring parameter graphs (Appendix C). In accordance with the *State of Hawaii Landfill Groundwater Monitoring Guidance Document* (DOH, 2002), no statistics or comparisons to control limits are performed on field parameters. The field parameter ranges are:

- Temperature 20.14 – 20.72 degrees Celsius
- Specific conductivity 3.01 – 6.67 millisiemens per centimeter
- pH 6.92 – 7.49 pH units
- Turbidity 0.0 – 12.2 Nephelometric Turbidity Units
- Salinity 0.15 – 0.36 percent
- Dissolved oxygen 8.15 – 8.62 mg/L

6.2 Inorganic Analyses

The January 2007 sampling results for inorganic constituents were consistent with previous data, shown in the graphs included in Appendix C. In accordance with the *State of Hawaii Landfill Groundwater Monitoring Guidance Document* (DOH, 2002), laboratory analytical results reported as not detected are plotted using one half of the reporting limit in those parameters that have detections at least 25 percent of the time. None of the inorganic constituents analyzed had concentrations exceeding the established intrawell control limits.

The results of monitoring parameter concentrations observed in wells HL-1 through HL-3, in mg/L, are as follows:

• Ammonia as nitrogen	Not Detected (<0.50)
• Chloride	750 – 1,700
• Sulfate	98 – 240
• Alkalinity	56.0 – 66.0
• TDS	1,300 – 3,060
• Calcium	21.5 – 48
• Magnesium	48.4 – 115
• Iron	Not Detected (<0.050) – 0.0519
• Potassium	17.1 – 37.7
• Sodium	425 – 964
• Vanadium	Not Detected (<0.010) – 0.0169
• Zinc	Not Detected (<0.020)

In well HL-1, compared to the previous sampling event, the concentrations of chloride, calcium, iron, and sodium have increased, while concentrations of sulfate, alkalinity, TDS, magnesium, potassium, and vanadium decreased. Ammonia as nitrogen and zinc concentrations remained below the laboratory detection limits (0.50 and 0.020 mg/L, respectively).

In well HL-2, compared to the previous sampling event, the concentrations of calcium and magnesium have increased, while concentrations of chloride sulfate, alkalinity, TDS, potassium, sodium, and vanadium decreased. Ammonia as nitrogen, iron, and zinc concentrations remained below the laboratory detection limits (0.50, 0.050, and 0.020 mg/L, respectively).

In well HL-3, compared to the previous sampling event, the concentrations of calcium, magnesium, and sodium have increased, while concentrations of sulfate, alkalinity, TDS, potassium, and vanadium decreased. The concentration of chloride remained the same. Ammonia as nitrogen, iron, and zinc concentrations remained below the laboratory detection limits (0.50, 0.050, and 0.020 mg/L, respectively).

6.3 Organic Analyses

Organic monitoring parameters included VOCs and TOC. Historically, VOCs have not been detected in the analyses performed to date. No VOCs were detected in any of the monitoring wells during the January 2007 sampling event.

TOC has historically been detected in the three wells at concentrations ranging from 1.0 to 9.19 mg/L. During the January 2007 sampling event, TOC was detected in all three wells at concentrations ranging from 1.2 to 2.2 mg/L, which is equal to or less than the intrawell statistical control limits of the monitoring wells.

6.4 Quality Assurance/Quality Control Data

Quality assurance/quality control (QA/QC) samples collected during the January 2007 monitoring event included a duplicate sample (labeled HL-4) collected at well HL-2. Review of the analytical data from well HL-2 and the duplicate sample (HL-4) indicate that all analyses were completed within acceptable analytical ranges. Duplicate analytical results are included in Appendix B and shown in Table 2.

A trip blank was included with the sample bottles and analyzed for VOCs. No VOCs were detected above laboratory reporting limits in the trip blank.

Laboratory QA/QC procedures included duplicate analyses, spike analyses and laboratory blanks. The laboratory QA/QC data are included in Appendix B.

A qualified URS chemist completed a Level III Data Validation Report, which is included with the analytical results in Appendix B. All data are useable as qualified for their intended purpose. None of the data were qualified or rejected.

7.0 CONCLUSIONS AND RECOMMENDATIONS

No visual or physical evidence of a release from the landfill to groundwater was observed during the January 2007 sampling event.

All laboratory monitoring parameter concentrations were within the statistical control limits established for each well during the January 2007 sampling event. With these findings, URS is recommending that semi-annual groundwater monitoring be continued in accordance with the current Detection Monitoring Program.

8.0 REFERENCES

- Brewer Environmental Services, 1999. *County of Maui Department of Public Works Baseline Report, Hana Landfill, Hana, Maui, Hawaii*. July 20.
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TABLES

TABLE 1
SUMMARY OF FIELD AND ANALYTICAL RESULTS HL-1
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	UNITS	HL-1 2000 Control Limit	HL-1 5/13/1993	HL-1 9/20/1995	HL-1 1/9/1996	HL-1 7/29/1996	HL-1 7/29/1996 Duplicate	HL-1 10/15/1996	HL-1 10/15/1996 Duplicate	HL-1 1/20/1997	4/
Field Parameters											
Groundwater Elevation	feet, MSL	NC	--	--	--	--	--	--	--	--	
Well Depth	feet, bgs	NC	--	--	--	--	--	--	--	--	
pH	pH units	NC	7.5	7.1	7.5	7.0	NA	7.4	NA	7.6	
Temperature	degrees C	NC	--	25	22	24	NA	23	NA	23	
Turbidity	NTU	NC	--	--	--	9.6	NA	9.6	NA	9.0	
Conductivity	mS/cm	NC	1.87	3.17	2.00	2.00	NA	2.35	NA	2.20	
Salinity	%	NC	--	--	--	--	--	--	--	--	
Dissolved Oxygen	mg/L	NC	--	--	--	--	--	--	--	--	
Conventional Parameters											
Total Organic Carbon	mg/L	7.0	--	--	--	2	ND (1.0)	ND (1.0)	ND (1.0)	3	
Ammonia-Nitrogen	mg/L	2.56	--	--	--	1.5	0.26	ND (0.05)	ND (0.05)	ND (0.05)	
Chloride	mg/L	1554	690	--	--	930	940	830	860	720	
Sulfate	mg/L	165	90	--	--	130	120	98	100	87	
Alkalinity	mg/L	86	72	--	--	66	60	55	58	63	
Total Dissolved Solids	mg/L	3099	1300	2020	1700	--	--	1900	1800	1300	
Calcium	mg/L	53	20	--	--	26	25	28	27	20	
Magnesium	mg/L	139	48	--	--	65	64	71	71	48	
Iron	mg/L	0.24	ND (0.1)	--	--	ND (0.05)	0.09	0.11	0.37	0.08	NI
Potassium	mg/L	29	18	--	--	20	20	22	21	17	
Sodium	mg/L	763	400	--	--	450	460	500	500	390	
Vanadium	mg/L	0.25	--	--	--	0.01	0.01	0.01	0.01	--	
Zinc	mg/L	0.25	ND (0.05)	--	--	0.01	ND (0.01)	0.07	0.03	--	NI
Volatile Organic Compounds											
EPA 8260 Test Method	mg/L	PQL	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	N

Notes:

-- no data collected

% - percent

bgs - below ground surface

Bold - exceedance of control limits

C - Celsius

EPA - Environmental Protection Agency

mg/L - milligrams per liter

msl - mean sea level

NA - not analyzed or measured

NC - not calculated

ND (3.0) - not detected (reporting limit)

ND (dv) - not detected (reporting limits vary)

NTU - Nephelometric Turbidity Units

mS/cm - millisiemens per centimeter

PQL - practical quantitation limit

TOC - total organic carbon

1993 data from Brown and Caldwell, 1993.

1995 through January 2004 data from BEI Environmental Services, 1999, 2001, 2002, 2003, 2004.

July 2004 data to present from URS Corporation.

¹ Result is suspect because surrogate recoveries fell outside their quality control limits.

² Although TOC concentration exceeds control limit, groundwater does not appear to be impacted by landfill leachate (URS 2/24/05 letter to DOE).

LE 1
ANALYTICAL RESULTS HL-1
, MAUI, HAWAII

HL-1 5/1996	HL-1 10/15/1996 Duplicate	HL-1 1/20/1997	HL-1 4/21/1997	HL-1 7/28/1997	HL-1 1/27/1998	HL-1 7/25/1998	HL-1 1/29/1999	HL-1 8/2/2000	HL-1 8/2/2000 Duplicate
--	--	--	--	--	--	--	--	0.39	NA
--	--	--	--	--	--	--	--	--	--
7.4	NA	7.6	7.2	6.4	8.0	7.0	6.9	7.29	NA
23	NA	23	23	22	22	24	22	21.06	NA
9.6	NA	9.0	7.5	0	--	650	--	--	NA
2.35	NA	2.20	2.10	2.78	2.09	2.31	1.73	3.43	NA
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
0 (1.0)	ND (1.0)	3	2	4	ND (1.0)	1.6	1.6	1.8	1.0
0 (0.05)	ND (0.05)	ND (0.05)	0.39	0.07	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.5)
830	860	720	730	680	570	1100	960	2110	957
98	100	87	84	110	93	110	100	116	127
55	58	63	67	61	66	60	66	60	62
900	1800	1300	1400	1400	1300	2100	1900	2090	2010
28	27	20	19	18	16	37	27	35.4	34.8
71	71	48	48	43	39	95	68	81	80.7
0.11	0.37	0.08	ND (0.05)	ND (0.01)	ND (0.01)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
22	21	17	18	17	19	23	19	25.0	24.6
500	500	390	420	390	350	580	490	569	581
0.01	0.01	--	0.02	0.01	0.02	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
0.07	0.03	--	ND (0.01)	ND (0.01)	0.02	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
0 (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

, 2004.

ected by landfill leachate (URS 2/24/05 letter to DOH).

TABLE 1
SUMMARY OF FIELD AND ANALYTICAL RESULTS HL-1
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	UNITS	HL-1 2000 Control Limit	HL-1 1/31/2001	HL-1 7/12/2001	HL-1 1/23/2002	HL-1 1/23/2002 Duplicate	HL-1 7/22/2002	HL-1 7/22/2002 Duplicate	HL-1 1/20/2003	HL-1 7/31/2003	HL-1 7/31/2003 Duplicate
Field Parameters											
Groundwater Elevation	feet, MSL	NC	1.53	1.15	1.31	NA	0.14	NA	1.66	0.54	NA
Well Depth	feet, bgs	NC	--	--	--	--	--	--	--	--	--
pH	pH units	NC	7.70	7.27	7.8	NA	6.90	NA	7.13	7.08	NA
Temperature	degrees C	NC	21.52	22.1	21	NA	21.2	NA	22.2	23.3	NA
Turbidity	NTU	NC	5.40	36	1	NA	1.05	1.95	1.59	1.15	0.1
Conductivity	mS/cm	NC	2.36	3.42	3.3	NA	2.91	NA	3.36	3.32	NA
Salinity	%	NC	--	--	--	--	--	--	--	0.17	NA
Dissolved Oxygen	mg/L	NC	--	--	--	--	--	--	--	--	--
Conventional Parameters											
Total Organic Carbon	mg/L	7.0	ND (2.0)	ND (2.0)	2.41	5.0	3.82	3.68	3.23	3.5	ND
Ammonia-Nitrogen	mg/L	2.56	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)	ND (0.1)	ND (0.1)	ND (0.05)	ND (0.1)	ND
Chloride	mg/L	1554	673	974	945	980	922	810	942	363	3
Sulfate	mg/L	165	91.9	ND (50)	57.9	58.4	109	107	140	133	1
Alkalinity	mg/L	86	68	66	64	64	66	70	62	64	6
Total Dissolved Solids	mg/L	3099	1410	2160	1920	1910	1470	1550	1840	1870	19
Calcium	mg/L	53	18.7	32.7	30.5	31	20.8	21.2	31.0	34.4	33
Magnesium	mg/L	139	44.4	76.6	69.6	70.4	51.8	54.7	72.7	81.2	89
Iron	mg/L	0.24	ND (0.1)	ND (0.2)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND
Potassium	mg/L	29	19.6	24.1	25.1	25.3	19.6	20.4	23.2	27.2	28
Sodium	mg/L	763	448	521	527	534	431	449	510	568	6
Vanadium	mg/L	0.25	ND (0.1)	ND (0.1)	0.0137	0.012	0.0166	0.0169	0.0152	0.0147	0.0
Zinc	mg/L	0.25	ND (0.1)	ND (0.1)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND
Volatile Organic Compounds											
EPA 8260 Test Method	mg/L	PQL	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND

Notes:

-- no data collected

% - percent

bgs - below ground surface

Bold - exceedance of control limits

C - Celsius

EPA - Environmental Protection Agency

mg/L - milligrams per liter

msl - mean sea level

NA - not analyzed or measured

NC - not calculated

ND (3.0) - not detected (reporting limit)

ND (dv) - not detected (reporting limits vary)

NTU - Nephelometric Turbidity Units

mS/cm - millisiemens per centimeter

PQL - practical quantitation limit

TOC - total organic carbon

1993 data from Brown and Caldwell, 1993.

1995 through January 2004 data from Brewer Environment Inc., 1999, 2001, 2002, 2003, 2004.

July 2004 data to present from URS Corporation.

¹ Result is suspect because surrogate recoveries fell outside their quality control limits.

² Although TOC concentration exceeds control limit, groundwater does not appear to be impacted by landfill leachate (URS 2/24/05 letter to DOH).

LE 1
ANALYTICAL RESULTS HL-1
, MAUI, HAWAII

HL-1 2/2002 Duplicate	HL-1 1/20/2003	HL-1 7/31/2003	HL-1 7/31/2003 Duplicate	HL-1 1/21/2004	HL-1 7/23/2004	HL-1 1/19/2005	HL-1 1/19/2005 Verification	HL-1 7/20/2005	HL-1 1/17/2006
NA	1.66	0.54	NA	1.25	1.08	1.23	NA	0.15	1.0
--	--	--	--	--	99.65	99.84	NA	99.62	99.64
NA	7.13	7.08	NA	7.16	7.30	6.32	NA	7.19	7.2
NA	22.2	23.3	NA	21.6	21.1	20.95	NA	21.0	20.46
95	1.59	1.15	0.65	1.30	0	2	NA	0	0.0
NA	3.36	3.32	NA	2.91	2.45	2.96	NA	3.08	3.06
--	--	0.17	NA	0.15	0.11	0.15	NA	0.2	0.15
--	--	--	--	--	9.73	7.37	NA	8.94	8.92
68	3.23	3.5	ND (2.0)	5.4	7.65 ²	1.52	4.58	ND (1.0)	3.9
(0.1)	ND (0.05)	ND (0.1)	ND (0.1)	ND (0.05)	ND (0.05)	ND (0.1)	--	ND (0.60)	ND (0.50)
10	942	363	315	873	739	888	--	720	830
07	140	133	130	125	95.7	94.9	--	120	120
70	62	64	62	68	56.0	68.0	--	68	70
550	1840	1870	1920	1710	1310	1610	--	1640	1660
1.2	31.0	34.4	33.7	21.0	18.2	21.8	--	25.0	22
4.7	72.7	81.2	89.8	49.3	44.1	54.3	--	63.5	56
(0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	--	ND (0.05)	ND (0.040)
0.4	23.2	27.2	28.2	20.3	21.3	22.0	--	21.3	22
49	510	568	607	397	426	498	--	467	450
0169	0.0152	0.0147	0.0164	0.0140	0.0170	0.0162	--	0.0146	0.02
(0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	--	ND (0.02)	ND (0.020)
(dv)	ND (dv)	ND (dv)	ND (dv) ¹	ND (dv)	ND (dv)	ND (dv)	--	ND (dv)	ND (dv)

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ected by landfill leachate (URS 2/24/05 letter to DOH).

TABLE 1
SUMMARY OF FIELD AND ANALYTICAL RESULTS HL
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	UNITS	HL-1 2000 Control Limit	HL-1 7/26/2006	HL-1 1/17/2007 Verification
Field Parameters				
Groundwater Elevation	feet, MSL	NC	-0.06	NA
Well Depth	feet, bgs	NC	99.64	NA
pH	pH units	NC	6.85	NA
Temperature	degrees C	NC	21.74	NA
Turbidity	NTU	NC	9.70	NA
Conductivity	mS/cm	NC	2.82	NA
Salinity	%	NC	0.14	NA
Dissolved Oxygen	mg/L	NC	10.51	NA
Conventional Parameters				
Total Organic Carbon	mg/L	7.0	12	ND (1.0)
Ammonia-Nitrogen	mg/L	2.56	ND (0.50)	--
Chloride	mg/L	1554	740	--
Sulfate	mg/L	165	120	--
Alkalinity	mg/L	86	74	--
Total Dissolved Solids	mg/L	3099	1490	--
Calcium	mg/L	53	20	--
Magnesium	mg/L	139	51	--
Iron	mg/L	0.24	ND (0.040)	--
Potassium	mg/L	29	19	--
Sodium	mg/L	763	420	--
Vanadium	mg/L	0.25	0.02	--
Zinc	mg/L	0.25	ND (0.020)	--
Volatile Organic Compounds				
EPA 8260 Test Method	mg/L	PQL	ND (dv)	--

Notes:

-- no data collected

% - percent

bgs - below ground surface

Bold - exceedance of control limits

C - Celsius

EPA - Environmental Protection Agency

mg/L - milligrams per liter

msl - mean sea level

NA - not analyzed or measured

NC - not calculated

ND (3.0) - not detected (reporting limit)

ND (dv) - not detected (reporting limits vary)

NTU - Nephelometric Turbidity Units

mS/cm - millisiemens per centimeter

PQL - practical quantitation limit

TOC - total organic carbon

LE 1
ANALYTICAL RESULTS HL-1
MAUI, HAWAII

1 2000 ntrol mit	HL-1 7/26/2006	HL-1 1/17/2007 Verification	HL-1 1/17/2007
NC	-0.06	NA	0.90
NC	99.64	NA	99.37
NC	6.85	NA	6.92
NC	21.74	NA	20.72
NC	9.70	NA	0.0
NC	2.82	NA	3.01
NC	0.14	NA	0.15
NC	10.51	NA	8.57
7.0	12	ND (1.0)	1.5
2.56	ND (0.50)	--	ND (0.50)
554	740	--	750
165	120	--	98
86	74	--	66.0
099	1490	--	1300
53	20	--	21.5
139	51	--	48.4
0.24	ND (0.040)	--	0.0519
29	19	--	17.1
763	420	--	425
0.25	0.02	--	0.0169
0.25	ND (0.020)	--	ND (0.020)
QL	ND (dv)	--	ND (dv)

TABLE 2
SUMMARY OF FIELD AND ANALYTICAL RESULTS HL
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	Units	HL-2 2000 Control Limit	HL-2 4/13/1993	HL-2 9/20/1995	HL-2 9/20/1995 Duplicate	HL-2 1/9/1996	HL-2 1/9/1996 Duplicate	HL-2 7/29/1996	HL-2 10/15/1996
Field Parameters									
Groundwater Elevation	feet, MSL	NC	--	--	--	--	--	--	--
Well Depth	feet, bgs	NC	--	--	--	--	--	--	--
pH	pH units	NC	7.3	7.3	NA	7.5	NA	7.0	7.4
Temperature	degrees C	NC	--	25	NA	21	NA	22	23
Turbidity	NTU	NC	--	--	NA	--	NA	12	34
Conductivity	mS/cm	NC	4.35	8.90	NA	3.60	NA	3.80	6.20
Salinity	%	NC	--	--	--	--	--	--	--
Dissolved Oxygen	mg/L	NC	--	--	--	--	--	--	--
Conventional Parameters									
Total Organic Carbon	mg/L	8.0	--	--	--	--	--	ND (1.0)	ND (1.0)
Ammonia-Nitrogen	mg/L	0.41	--	--	--	--	--	0.26	ND (0.41)
Chloride	mg/L	3807	1500	--	--	--	--	1700	200
Sulfate	mg/L	484	240	--	--	--	--	280	230
Alkalinity	mg/L	84	68	--	--	--	--	56	50
Total Dissolved Solids	mg/L	7005	2800	4040	4430	1700	2440	--	350
Calcium	mg/L	90	41	--	--	--	--	42	47
Magnesium	mg/L	261	95	--	--	--	--	120	140
Iron	mg/L	1.38	8.3	--	--	--	--	0.82	ND (0.82)
Potassium	mg/L	74	33	--	--	--	--	37	41
Sodium	mg/L	1915	810	--	--	--	--	920	100
Vanadium	mg/L	0.31	--	--	--	--	--	0.01	0.01
Zinc	mg/L	0.25	ND (0.02)	--	--	--	--	0.02	0.02
Volatile Organic Compounds									
EPA 8260 Test Method	mg/L	PQL	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

Notes:

-- no data collected
 % - percent
 bgs - below ground surface
 Bold - exceedance of control limits
 C - Celsius
 EPA - Environmental Protection Agency
 mg/L - milligrams per liter
 msl - mean sea level
 NA - not analyzed or measured
 NC - not calculated
 ND (3.0) - not detected (reporting limit)
 ND (dv) - not detected (reporting limits vary)
 NTU - Nephelometric Turbidity Units
 mS/cm - millisiemens per centimeter
 PQL - practical quantitation limit
 TOC - total organic carbon

1993 data from Brown and Caldwell, 1993.
 1995 through January 2004 data from Brewer Environment Inc., 1999, 2001, 2002, 2003, 2004.
 July 2004 data to present from URS Corporation.

LE 2
ANALYTICAL RESULTS HL-2
MAUI, HAWAII

HL-2 1/9/1996 Duplicate	HL-2 7/29/1996	HL-2 10/15/1996	HL-2 1/20/1997	HL-2 1/20/1997 Duplicate	HL-2 4/21/1997	HL-2 7/28/1997	HL-2 7/28/1997 Duplicate
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
NA	7.0	7.4	8.1	NA	7.3	7.3	NA
NA	22	23	22	NA	22	22	NA
NA	12	34	15	NA	36	151	NA
NA	3.80	6.20	2.00	NA	4.00	5.72	NA
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	ND (1.0)	ND (1.0)	5	5	2	ND (1.0)	ND (1.0)
--	0.26	ND (0.05)	ND (0.05)	ND (0.05)	0.09	0.06	0.05
--	1700	2000	640	570	200	1200	1100
--	280	230	83	74	220	230	230
--	56	50	63	61	58	58	57
2440	--	3500	1200	1100	3400	3100	3000
--	42	47	13	11	44	40	40
--	120	140	33	27	120	100	110
--	0.82	ND (0.05)	0.11	0.31	ND (0.05)	ND (0.01)	ND (0.01)
--	37	41	14	13	39	38	38
--	920	1000	290	260	1000	890	890
--	0.01	0.01	--	--	0.02	0.010	0.0100
--	0.02	0.02	--	--	ND (0.01)	ND (0.01)	ND (0.01)
ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

1999, 2001, 2002, 2003, 2004.

TABLE 2
SUMMARY OF FIELD AND ANALYTICAL RESULTS HL
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	Units	HL-2 2000 Control Limit	HL-2 1/27/1998	HL-2 1/27/1998 Duplicate	HL-2 7/25/1998	HL-2 1/29/1999	HL-2 8/2/2000	HL-2 1/31/2001	HL-2 1/31/2002 Duplicate
Field Parameters									
Groundwater Elevation	feet, MSL	NC	--	--	--	--	1.25	2.29	NA
Well Depth	feet, bgs	NC	--	--	--	--	--	--	--
pH	pH units	NC	7.8	NA	6.3	7.1	7.38	7.51	NA
Temperature	degrees C	NC	25	NA	21	21	21.31	22.08	NA
Turbidity	NTU	NC	--	NA	128	--	--	11.17	NA
Conductivity	mS/cm	NC	4.95	NA	6.34	5.75	6.83	4.56	NA
Salinity	%	NC	--	--	--	--	--	--	--
Dissolved Oxygen	mg/L	NC	--	--	--	--	--	--	--
Conventional Parameters									
Total Organic Carbon	mg/L	8.0	ND (1.0)	ND (1.0)	ND (1.0)	1.6	1.19	2.53	4.69
Ammonia-Nitrogen	mg/L	0.41	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.25)	ND (0.05)
Chloride	mg/L	3807	1600	1600	2200	1900	998	1260	1340
Sulfate	mg/L	484	230	230	280	190	269	236	230
Alkalinity	mg/L	84	54	53	52	50	48	60	66
Total Dissolved Solids	mg/L	7005	3300	3100	4100	3300	4330	3340	3460
Calcium	mg/L	90	35	34	53	44	57.8	41.5	41.3
Magnesium	mg/L	261	93	93	150	120	151	107	107
Iron	mg/L	1.38	0.01	0.01	0.13	ND (0.05)	ND (0.1)	ND (0.1)	ND (0.1)
Potassium	mg/L	74	36	36	43	37	49.3	43.9	43.9
Sodium	mg/L	1915	830	830	1100	940	1190	1030	1020
Vanadium	mg/L	0.31	0.15	0.02	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Zinc	mg/L	0.25	ND (0.01)	ND (0.01)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Volatile Organic Compounds									
EPA 8260 Test Method	mg/L	PQL	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

Notes:

-- no data collected
 % - percent
 bgs - below ground surface
 Bold - exceedance of control limits
 C - Celsius
 EPA - Environmental Protection Agency
 mg/L - milligrams per liter
 msl - mean sea level
 NA - not analyzed or measured
 NC - not calculated
 ND (3.0) - not detected (reporting limit)
 ND (dv) - not detected (reporting limits vary)
 NTU - Nephelometric Turbidity Units
 mS/cm - millisiemens per centimeter
 PQL - practical quantitation limit
 TOC - total organic carbon

1993 data from Brown and Caldwell, 1993.

1995 through January 2004 data from Brewer Environment Inc., 1999, 2001, 2002, 2003, 2004.

July 2004 data to present from URS Corporation.

LE 2

ANALYTICAL RESULTS HL-2
MAUI, HAWAII

	HL-2 8/2/2000	HL-2 1/31/2001	HL-2 1/31/2001 Duplicate	HL-2 7/12/2001	HL-2 1/23/2002	HL-2 7/22/2002	HL-2 1/20/2003	HL-2 7/31/2003
	1.25	2.29	NA	2.02	2.12	1.09	2.23	1.24
	--	--	--	--	--	--	--	--
	7.38	7.51	NA	7.06	8.0	7.86	7.3	7.21
	21.31	22.08	NA	21.7	22	21.3	20.7	21.7
	--	11.17	NA	35	17	28	2.15	2.16
	6.83	4.56	NA	6.23	5.60	6.00	6.48	6.33
	--	--	--	--	--	--	--	0.35
	--	--	--	--	--	--	--	--
	1.19	2.53	4.69	ND (2.0)	4.18	4	2.20	2.29
	ND (0.05)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)	ND (0.1)	ND (0.05)	ND (0.1)
	998	1260	1340	2220	1480	1980	2230	703
	269	236	230	93.7	75.4	222	286	288
	48	60	66	48	56	60	58	52
	4330	3340	3460	4310	2800	3270	3910	3860
	57.8	41.5	41.3	53	38.6	41.3	51.7	55
	151	107	107	142	93	123	145	164
	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.2)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
	49.3	43.9	43.9	46.3	38.1	43.1	47.6	53.3
	1190	1030	1020	1060	782	1020	1080	1180
	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.022	0.02	0.015	0.0142
	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

1999, 2001, 2002, 2003, 2004.

TABLE 2
SUMMARY OF FIELD AND ANALYTICAL RESULTS H
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	Units	HL-2 2000 Control Limit	HL-2 1/21/2004	HL-2 1/21/2004 Duplicate	HL-2 7/23/2004	HL-2 7/23/2004 Duplicate	HL-2 1/19/2005	HL-2 1/19/2005 Duplicate	HL-2 7/20/2005	HL-2 7/20/2005 Duplicate
Field Parameters										
Groundwater Elevation	feet, MSL	NC	1.87	NA	1.89	NA	2.02	NA	1.01	NA
Well Depth	feet, bgs	NC	--	--	45.35	NA	45.35	NA	45.36	NA
pH	pH units	NC	7.33	NA	7.82	NA	6.46	NA	7.45	NA
Temperature	degrees C	NC	21.4	NA	21.0	NA	20.74	NA	20.8	NA
Turbidity	NTU	NC	2.8	3.34	0	NA	25.2	NA	6	NA
Conductivity	mS/cm	NC	6.13	NA	5.49	NA	5.91	NA	6.43	NA
Salinity	%	NC	0.33	NA	0.28	NA	0.31	NA	0.3	NA
Dissolved Oxygen	mg/L	NC	--	--	8.28	NA	7.84	NA	8.48	NA
Conventional Parameters										
Total Organic Carbon	mg/L	8.0	3	9.19	7.55	11.5	7.33	2.72	1.0	ND (0.1)
Ammonia-Nitrogen	mg/L	0.41	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.1)	ND (0.1)	ND (0.60)	ND (0.1)
Chloride	mg/L	3807	2200	2230	1760	1770	1950	1920	1600	1700
Sulfate	mg/L	484	294	297	234	288	244	234	250	260
Alkalinity	mg/L	84	54	56	44.0	64.0	54.0	56.0	62.0	60.0
Total Dissolved Solids	mg/L	7005	3740	3850	3090	3130	3400	3310	3680	3700
Calcium	mg/L	90	37.9	40.6	37.4	37.6	40.0	40.4	45.8	45.0
Magnesium	mg/L	261	111	117	98.6	98.8	118.0	117.0	132.0	130.0
Iron	mg/L	1.38	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Potassium	mg/L	74	43.5	44.4	42.3	42.1	45.0	45.3	45.8	45.0
Sodium	mg/L	1915	892	956	1020	1030	1060	1050	1030	1000
Vanadium	mg/L	0.31	0.01	0.0124	0.0162	0.0162	0.0168	0.0168	0.0144	0.01
Zinc	mg/L	0.25	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.02)	ND (0.05)
Volatile Organic Compounds										
EPA 8260 Test Method	mg/L	PQL	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

Notes:

-- no data collected
% - percent
bgs - below ground surface
Bold - exceedance of control limits
C - Celsius
EPA - Environmental Protection Agency
mg/L - milligrams per liter
msl - mean sea level
NA - not analyzed or measured
NC - not calculated
ND (3.0) - not detected (reporting limit)
ND (dv) - not detected (reporting limits vary)
NTU - Nephelometric Turbidity Units
mS/cm - millisiemens per centimeter
PQL - practical quantitation limit
TOC - total organic carbon

1993 data from Brown and Caldwell, 1993.

1995 through January 2004 data from Brewer Environment Inc., 1999, 2001, 2002, 2003, 2004.

July 2004 data to present from URS Corporation.

LE 2
 ANALYTICAL RESULTS HL-2
 , MAUI, HAWAII

HL-2 1/19/2005 Duplicate	HL-2 7/20/2005	HL-4 7/20/2005 Duplicate	HL-2 1/17/2006	HL-4 1/17/2006 Duplicate	HL-2 7/26/2006	HL-4 7/26/2006 Duplicate	HL-2 1/17/2007	HL-4 1/17/2007 Duplicate
NA	1.01	NA	1.72	NA	0.83	NA	1.66	NA
NA	45.36	NA	45.36	NA	45.35	NA	45.35	NA
NA	7.45	NA	6.91	NA	7.37	NA	7.49	NA
NA	20.8	NA	20.58	NA	20.68	NA	20.53	NA
NA	6	NA	87.6	NA	3.9	NA	0	NA
NA	6.43	NA	6.37	NA	6.31	NA	6.67	NA
NA	0.3	NA	0.34	NA	0.34	NA	0.36	NA
NA	8.48	NA	8.72	NA	9.38	NA	8.62	NA
2.72	1.0	ND (1.0)	ND(1.0)	ND(1.0)	2.0	1.5	1.0	1.2
ND (0.1)	ND (0.60)	ND (0.60)	ND(0.50)	ND(0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1920	1600	1700	1900	1900	1900	1800	1700	1800
234	250	260	290	270	270	270	240	240
56.0	62.0	60.0	60.0 J	58.0	68.0	66.0	60.0	56.0
3310	3680	3700	3790	3920	3420	3260	3060	3080
40.4	45.8	45.8	43	44	39	40	48	49.4
117.0	132.0	131.0	120	120	110	120	113	115
ND (0.05)	ND (0.05)	ND (0.05)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.050)	ND (0.050)
45.3	45.8	45.8	47	42	42	43	38	39.0
1050	1030	1030	960	1000	980	990	964	963
0.0168	0.0144	0.0143	0.016	0.016	0.015	0.014	0.0138	0.0106
ND (0.05)	ND (0.02)	ND (0.02)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

, 2003, 2004.

TABLE 3
SUMMARY OF FIELD AND ANALYTICAL RESULTS FROM
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	Units	HL-3 2000 Control Limit	HL-3 4/13/1993	HL-3 9/20/1995	HL-3 1/9/1996	HL-3 7/29/1996	HL-3 10/15/1996	HL-3 1/20/1997	HL-3 4/21/1997	HL-3 4/21/1997 Duplicate
Field Parameters										
Groundwater Elevation	feet, MSL	NC	--	--	--	--	--	--	--	--
Well Depth	feet, bgs	NC	--	--	--	--	--	--	--	--
pH	pH units	NC	7.4	7.5	7.5	7.5	8.2	8.0	7.4	NA
Temperature	degrees C	NC	--	24	21	22	22	22	22	NA
Turbidity	NTU	NC	--	--	--	14	58	83	25	NA
Conductivity	mS/cm	NC	3.52	5.79	3.40	4.40	5.80	3.60	4.00	NA
Salinity	%	NC	--	--	--	--	--	--	--	--
Dissolved Oxygen	mg/L	NC	--	--	--	--	--	--	--	--
Conventional Parameters										
Total Organic Carbon	mg/L	2.20	--	--	--	ND (1.0)	ND (1.0)	1.0	ND (1.0)	1.0
Ammonia-Nitrogen	mg/L	0.46	--	--	--	0.28	ND (0.05)	ND (0.05)	0.13	0.12
Chloride	mg/L	2690	1400	--	--	1400	1700	1500	1700	1700
Sulfate	mg/L	311	220	--	--	240	190	180	180	180
Alkalinity	mg/L	76	59	--	--	56	44	51	49	51
Total Dissolved Solids	mg/L	4669	2500	3430	1700	--	3000	2600	2900	3000
Calcium	mg/L	61	34	--	--	38	40	36	33	37
Magnesium	mg/L	176	85	--	--	110	120	98	96	110
Iron	mg/L	2.54	2.7	--	--	ND (0.05)	ND (0.05)	1.5	ND (0.05)	ND (0.05)
Potassium	mg/L	51	29	--	--	32	34	32	31	35
Sodium	mg/L	1166	730	--	--	810	880	800	840	950
Vanadium	mg/L	0.25	--	--	--	ND (0.01)	ND (0.01)	--	0.01	0.01
Zinc	mg/L	PQL ¹	ND (0.02)	--	--	ND (0.01)	ND (0.01)	--	ND (0.01)	ND (0.01)
Volatile Organic Compounds										
EPA 8260 Test Method	mg/L	PQL	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

Notes:

-- no data collected
 % - percent
 bgs - below ground surface
 Bold - exceedance of control limits
 C - Celsius
 EPA - Environmental Protection Agency
 mg/L - milligrams per liter
 msl - mean sea level
 NA - not analyzed or measured
 NC - not calculated
 ND (3.0) - not detected (reporting limit)
 ND (dv) - not detected (reporting limits vary)
 NTU - Nephelometric Turbidity Units
 mS/cm - millisiemens per centimeter
 PQL - practical quantitation limit
 TOC - total organic carbon

1993 data from Brown and Caldwell, 1993.
 1995 through January 2004 data from BEI Environmental Services, 1999, 2001, 2002, 2003, 2004.
 July 2004 data to present from URS Corporation.

¹ Zinc not detected during the baseline sampling, control limit is the practical quantitation limit.

LE 3
ANALYTICAL RESULTS HL-3
, MAUI, HAWAII

HL-3 20/1997	HL-3 4/21/1997	HL-3 4/21/1997 Duplicate	HL-3 7/28/1997	HL-3 1/27/1998	HL-3 7/25/1998	HL-3 1/29/1999	HL-3 8/2/2000	HL-3 1/31/2001	HL-3 7/12/2001
--	--	--	--	--	--	--	0.27	1.28	1
--	--	--	--	--	--	--	--	--	--
8.0	7.4	NA	7.3	8	7.2	7.5	7.32	7.51	7.4
22	22	NA	21	22	25	20	19.54	21.06	21.2
83	25	NA	67	--	999	--	--	15.8	56
3.60	4.00	NA	5.47	4.33	2.80	5.63	6.49	4.35	5.70
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
1.0	ND (1.0)	1.0	ND (1.0)	1.0	1.1	1.7	1.3	3.1	ND (2.0)
D (0.05)	0.13	0.12	0.07	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.25)	ND (0.25)
1500	1700	1700	1200	1100	1700	1900	1880	1140	1890
180	180	180	200	210	240	190	227	188	94.1
51	49	51	50	46	56	58	54	52	26
2600	2900	3000	2800	2900	3500	3500	3820	3080	3730
36	33	37	35	31	47	43	53.1	34.6	47.9
98	96	110	95	89	130	120	137	94.4	130
1.5	ND (0.05)	ND (0.05)	ND (0.01)	ND (0.01)	0.13	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.2)
32	31	35	37	34	39	40	47.4	40.5	41.6
800	840	950	820	780	940	950	1050	939	945
--	0.01	0.01	ND (0.01)	0.01	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
--	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
D (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

003, 2004.

n limit.

TABLE 3
SUMMARY OF FIELD AND ANALYTICAL RESULTS HL-3
HANA LANDFILL, MAUI, HAWAII

Well No. Date Analyte	Units	HL-3 2000 Control Limit	HL-3 7/12/2001 Duplicate	HL-3 1/23/2002	HL-3 7/22/2002	HL-3 1/20/2003	HL-3 1/20/2003 Duplicate	HL-3 7/31/2003	HL-3 1/21/2004	HL-3 7/23/2004
Field Parameters										
Groundwater Elevation	feet, MSL	NC	NA	1.11	-0.02	1.24	NA	0.32	0.97	0.88
Well Depth	feet, bgs	NC	--	--	--	--	--	--	--	57.59
pH	pH units	NC	NA	7.9	7.49	7.21	NA	7.20	7.26	7.86
Temperature	degrees C	NC	NA	21	21.0	21.7	NA	22.1	21.0	21.3
Turbidity	NTU	NC	NA	59.2	77	2.92	3.08	34.4	30.2	1
Conductivity	mS/cm	NC	NA	5.40	5.59	5.94	NA	5.5	5.46	5.04
Salinity	%	NC	--	--	--	--	--	0.3	0.3	0.28
Dissolved Oxygen	mg/L	NC	--	--	--	--	--	--	--	7.98
Conventional Parameters										
Total Organic Carbon	mg/L	2.20	ND (2.0)	ND (2.0)	3.47	ND (2.0)	ND (2.0)	3.00	7.35	8.85
Ammonia-Nitrogen	mg/L	0.46	ND (0.25)	ND (0.05)	0.128	ND (0.05)	ND (0.05)	ND (0.1)	ND (0.05)	ND (0.05)
Chloride	mg/L	2690	1850	2070	1970	1810	1860	540	1940	1650
Sulfate	mg/L	311	87.2	80.3	224	256	261	243	263	204
Alkalinity	mg/L	76	48	48	54	50	50	48	50	54.0
Total Dissolved Solids	mg/L	4669	3780	3460	3270	3580	3520	3180	3320	2790
Calcium	mg/L	61	47.4	43.7	38.1	46.7	47.3	50.9	36.6	32.9
Magnesium	mg/L	176	128	116	110	131	129	148	106	91.2
Iron	mg/L	2.54	ND (0.2)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Potassium	mg/L	51	40.7	42.7	38.8	42.2	42.1	46.6	39.2	38.2
Sodium	mg/L	1166	921	894	911	976	948	1020	847	941
Vanadium	mg/L	0.25	ND (0.1)	ND (0.01)	0.013	0.012	0.0117	0.0117	ND (0.01)	0.0138
Zinc	mg/L	PQL ¹	ND (0.1)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Volatile Organic Compounds										
EPA 8260 Test Method	mg/L	PQL	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)	ND (dv)

Notes:

-- - no data collected
 % - percent
 bgs - below ground surface
 Bold - exceedance of control limits
 C - Celsius
 EPA - Environmental Protection Agency
 mg/L - milligrams per liter
 msl - mean sea level
 NA - not analyzed or measured
 NC - not calculated
 ND (3.0) - not detected (reporting limit)
 ND (dv) - not detected (reporting limits vary)
 NTU - Nephelometric Turbidity Units
 mS/cm - millisiemens per centimeter
 PQL - practical quantitation limit
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1993 data from Brown and Caldwell, 1993.
 1995 through January 2004 data from Brewer Environment Inc., 1999, 2001, 2002, 2003, 2004.
 July 2004 data to present from URS Corporation.

¹ Zinc not detected during the baseline sampling, control limit is the practical quantitation limit.

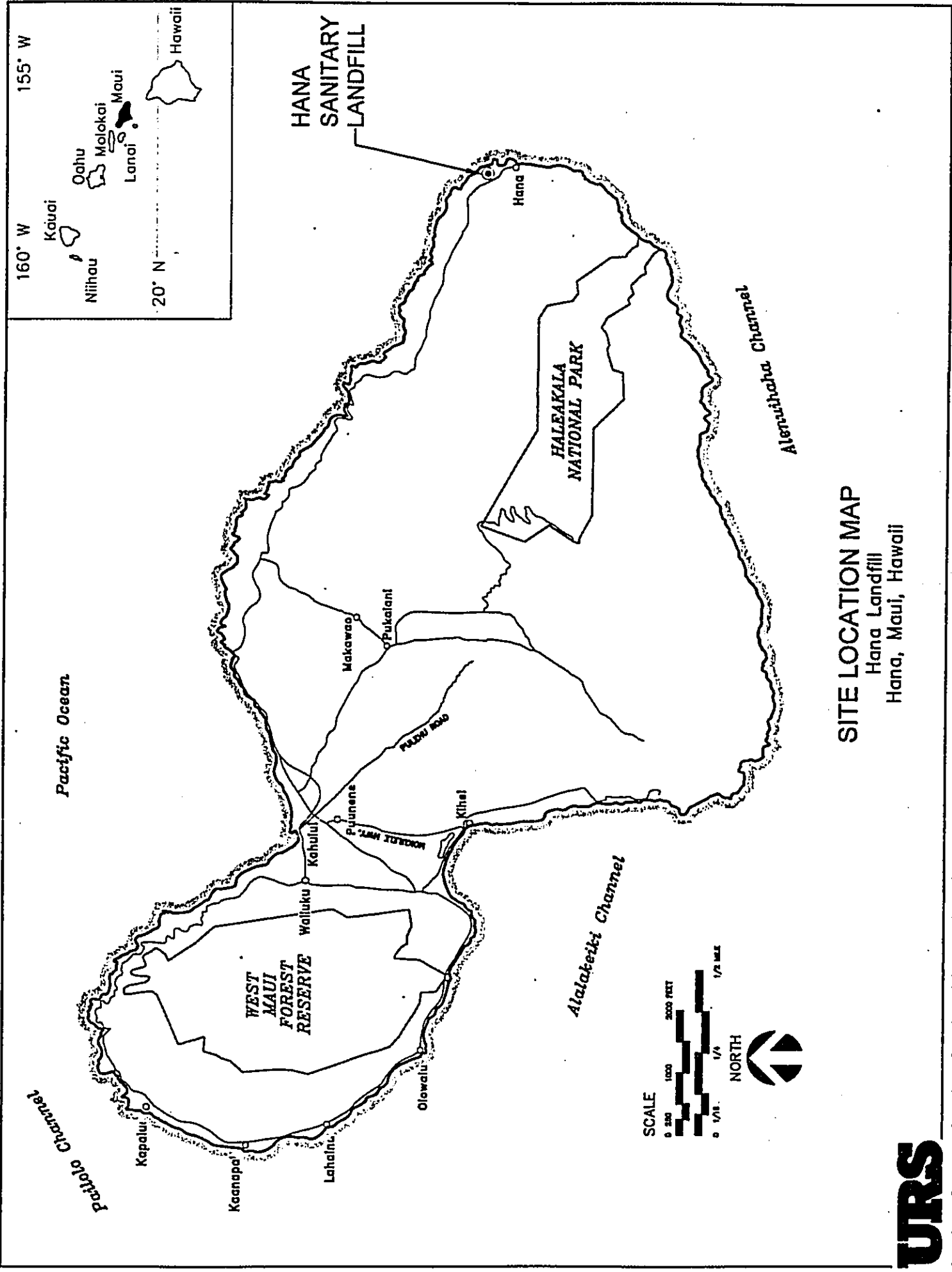
LE 3
ANALYTICAL RESULTS HL-3
MAUI, HAWAII

HL-3 7/31/2003	HL-3 1/21/2004	HL-3 7/23/2004	HL-3 1/19/2005	HL-3 1/19/2005 Verification	HL-3 7/20/2005	HL-3 1/17/2006	HL-3 7/26/2006	HL-3 1/17/2007
0.32	0.97	0.88	1.03	NA	0.01	0.73	-0.18	0.66
--	--	57.59	57.57	NA	57.55	58.63	57.55	57.55
7.20	7.26	7.86	6.45	NA	7.37	7.37	7.15	7.32
22.1	21.0	21.3	20.16	NA	20.2	19.87	20.24	20.14
34.4	30.2	1	7.4	NA	12	28.9	34.3	12.2
5.5	5.46	5.04	5.67	NA	5.47	5.66	5.61	5.96
0.3	0.3	0.28	0.3	NA	0.3	0.30	0.30	0.32
--	--	7.98	7.06	NA	8.66	8.68	9.63	8.15
3.00	7.35	8.85	7.29	2.28	1.0	1.9	1.7	2.2
ND (0.1)	ND (0.05)	ND (0.05)	ND (0.1)	--	ND (0.6)	ND (0.50)	ND (0.50)	ND (0.50)
540	1940	1650	1880	--	1400	1600	1600	1600
243	263	204	234	--	200	250	240	210
48	50	54.0	50.0	--	50.0	52.0	58.0	56.0
3180	3320	2790	3220	--	3110	3380	2890	2840
50.9	36.6	32.9	37.5	--	39.8	37	34	44.2
148	106	91.2	114.0	--	115.0	110	100	115
ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	--	ND (0.05)	ND (0.040)	ND (0.040)	ND (0.050)
46.6	39.2	38.2	42.3	--	38.7	35	36	35.6
1020	847	941	1060	--	888	890	870	949
0.0117	ND (0.01)	0.0138	0.0122	--	0.0123	0.013	0.012	ND (0.010)
ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	--	ND (0.02)	ND (0.020)	ND (0.020)	ND (0.020)
ND (dv)	ND (dv)	ND (dv)	ND (dv)	--	ND (dv)	ND (dv)	ND (dv)	ND (dv)

2003, 2004.

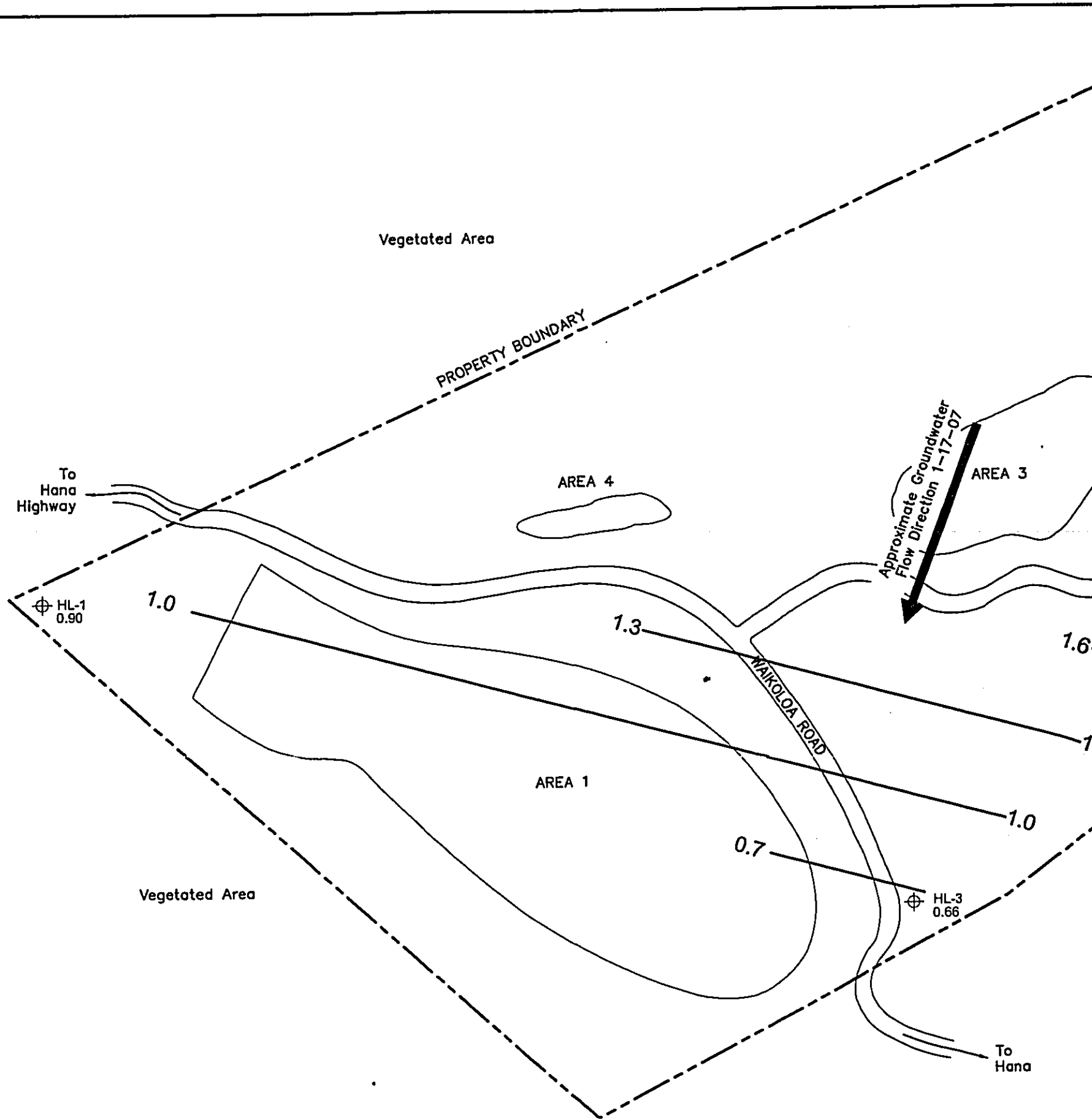
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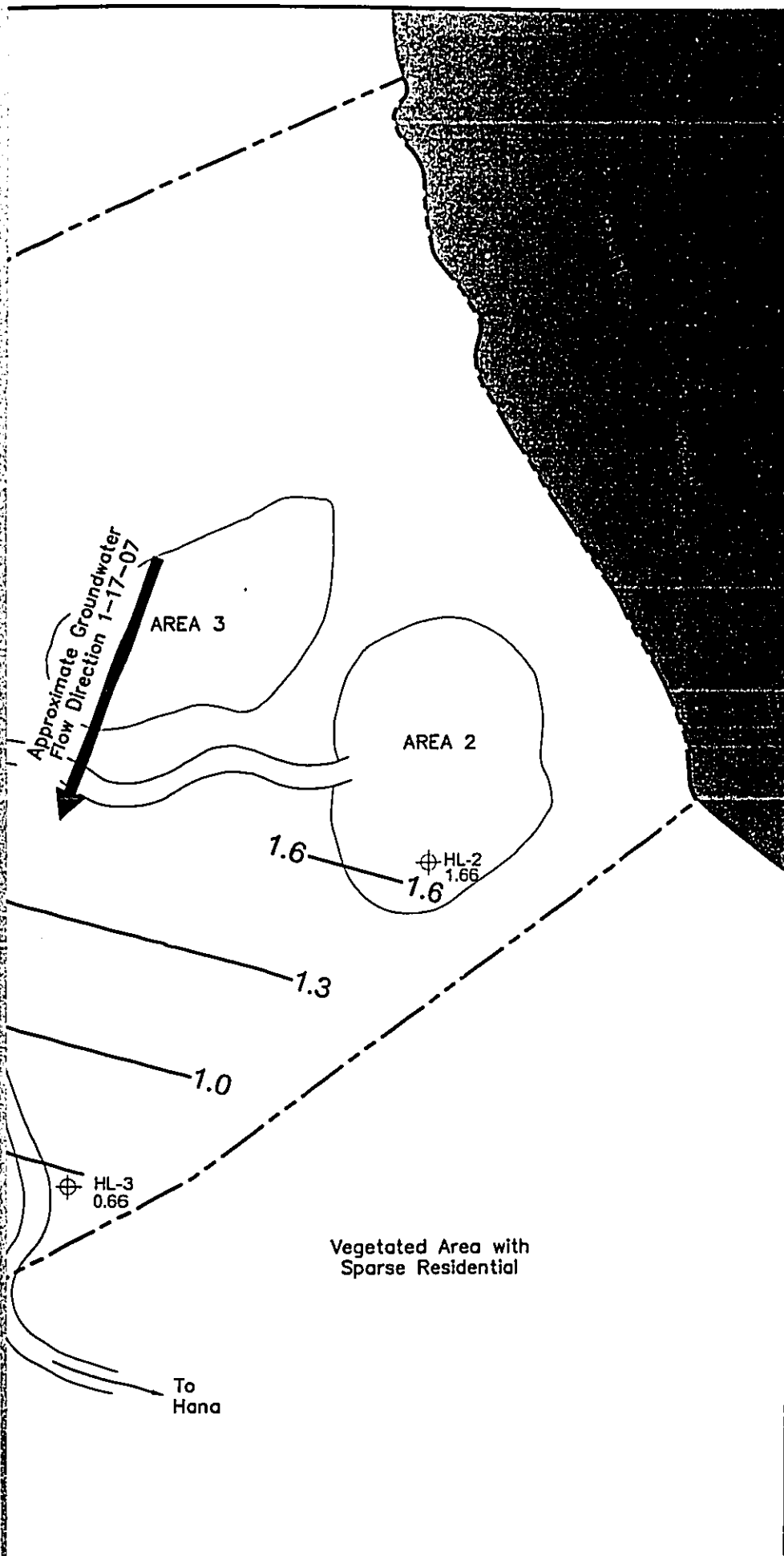
FIGURES




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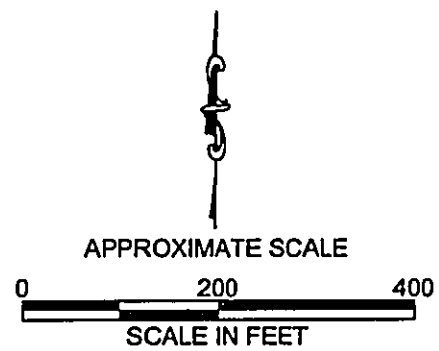


EXPLANATION:

- HL-1  Monitoring Well and Potentiometric Level
 0.90
- Approximate Boundary of Landfill
- 0.7 — Potentiometric Contour (In Feet Above Mean Sea Level)

REFERENCE:

Request for Proposals, May 9, 2004,
 County of Maui DPW and Waste Management



**GROUNDWATER
 POTENTIOMETRIC
 SURFACE MAP
 17 JANUARY 2007
 Hana Landfill
 Hana, Maui, Hawaii**

FIGURE 2

APPENDIX A

FIELD DATA

WELL PURGING/SAMPLING DATA SHEET

Well No.: HL-1 Date: 1/17/2007
 Depth of Well: 99.37 Sampling Event: January 2007
 Casing Type/Diameter: 4-inch diameter PVC Location: Hana Landfill
 Weather: Warm, ptly cloudy, rained while purging Sampled by: JTH/VEP

PURGING PRIOR TO SAMPLING

Purging Method: 1.5" diam. Disposable bailer One Casing Volume (CV), gallons: 5.02
 Initial Water Level and Time: 91.96 @1138 Purge Volume (3 CVs), gallons: 15.06

*Casing Volume = (depth of well - initial water level) * 0.653*

Date	Time	Gallons Removed	pH (pH units)	Spec. Cond. (mS/cm)	Turbidity (N.T.U.)	DO (mg/L)	Temp (°C)	Salinity (‰)	Comments (appearance of water, odor, etc)
1/17/07	1156	0	6.35	3.06	0.0	8.87	22.43	0.15	Clear, no sheen, no odor
1/17/07	1201	2	6.52	3.04	0.0	8.95	21.18	0.15	Same as previous
1/17/07	1204	4	6.59	2.98	0.0	8.74	20.91	0.15	Same as previous
1/17/07	1212	6	6.74	2.92	0.0	9.00	21.29	0.14	Same as previous
1/17/07	1220	8	6.83	3.07	0.0	9.07	21.05	0.15	Same as previous
1/17/07	1226	10	6.88	2.98	0.0	8.84	20.97	0.15	Same as previous
1/17/07	1229	12	6.88	2.95	0.0	8.95	20.81	0.15	Same as previous
1/17/07	1235	14	6.90	3.02	0.0	8.53	20.76	0.15	Same as previous
1/17/07	1339	16	6.92	3.01	0.0	8.57	20.72	0.15	Same as previous

RECORD OF SAMPLING

Sampling Method: 1.5" diam. Disposable bailer Temp: 20.72
 Date/Time of Sample: 1/17/07 @ 1245 Spec. Cond: 3.01
 Date/Time of verification sample: 1/17/07 @ 1255 pH: 6.92
 DO: 8.57
 Salinity: 0.15

Sample Number	Container Types/preservation	Analysis
HL-1	3 VOAs / HCl	VOCs 8260
HL-1	1 250 mL / H ₂ SO ₄	TOC
HL-1	1 liter / none	Metals
HL-1		Gen Chemistry
HL-1	1 250 mL / H ₂ SO ₄	Ammonia - Nitrogen
HL-1	1 250 ml / none	Alkalinity, Total
HL-1 Verification	1 250 mL / H ₂ SO ₄	TOC

Comments: Black mark on top of casing.

WELL PURGING/SAMPLING DATA SHEET

Well No.: HL-2
 Depth of Well: 45.38
 Casing Type/Diameter: 4-inch diameter PVC
 Weather: Partly cloudy

Date: 1/17/07
 Sampling Event: January 2007
 Location: Hana Landfill
 Sampled by: JTH/VEP

PURGING PRIOR TO SAMPLING

Purging Method: 1.5" diam. Disposable bailer
 Initial Water Level and Time: 34.78 @ 1119

One Casing Volume (CV), gallons: 7.10
 Purge Volume (3 CVs), gallons: 21.31

*Casing Volume = (depth of well - initial water level) * 0.653*

Date	Time	Gallons Removed	pH (pH units)	Spec. Cond. (mS/cm)	Turbidity (N.T.U.)	DO (mg/L)	Temp (°C)	Salinity (‰)	Comments (appearance of water, odor, etc)
1/17/07	1412	0	7.60	6.07	0.0	8.47	21.03	0.32	Clear, no odor, no sheen
1/17/07	1414	2	7.51	6.12	3.2	8.87	20.79	0.33	Same as previous
1/17/07	1416	4	7.49	6.11	4.3	8.85	20.73	0.33	Same as previous
1/17/07	1419	6	7.48	6.34	5.1	8.64	20.68	0.34	Same as previous
1/17/07	1421	8	7.46	6.03	3.2	8.03	20.75	0.32	Same as previous
1/17/07	1425	10	7.45	6.09	1.2	8.02	20.73	0.32	Same as previous
1/17/07	1428	12	7.48	6.04	3.0	8.55	20.86	0.32	Same as previous
1/17/07	1431	14	7.49	6.10	0.0	8.79	20.70	0.33	Same as previous
1/17/07	1434	16	7.52	6.10	0.0	8.88	20.74	0.33	Same as previous
1/17/07	1436	18	7.49	6.47	8.8	8.59	20.68	0.34	Same as previous
1/17/07	1437	20	7.47	6.52	0.0	8.49	20.55	0.35	Same as previous
1/17/07	1440	22	7.49	6.67	0.0	8.62	20.53	0.36	Same as previous

RECORD OF SAMPLING

Sampling Method: 1.5" diam. Disposable bailer Temp: 20.53
 Date/Time of Sample: 1/17/2007 @ 1440 Spec. Cond.: 6.67
 Duplicate Sample HL-4 @ 1550 pH: 7.49
 DO: 8.62
 Salinity: 0.36

Sample Number	Container Types/preservation	Analysis
HL-2 / HL-4	6 VOAs / HCl	VOCs 8260
HL-2 / HL-4	2 250 mL / H ₂ SO ₄	TOC
HL-2 / HL-4	2-1 liter / none	Metals
HL-2 / HL-4		Gen Chemistry
HL-2 / HL-4	2 250 mL / H ₂ SO ₄	Ammonia - Nitrogen
HL-2 / HL-4	2 250 ml / none	Alkalinity, Total

Comments: Yellow well J-Plug cap is broken; black mark on top of casing, outer metal casing rusting.

WELL PURGING/SAMPLING DATA SHEET

Well No.: HL-3
 Depth of Well: 57.55
 Casing Type/Diameter: 4-inch diameter PVC
 Weather: Cloudy, light rain

Date: 1/17/07
 Sampling Event: January 2007
 Location: Hana Landfill
 Sampled by: JTH/VEP

PURGING PRIOR TO SAMPLING

Purging Method: 1.5" diam. Disposable bailer
 Initial Water Level and Time: 50.20 @ 1129

One Casing Volume (CV), gallons: 4.98
 Purge Volume (3 CVs), gallons: 14.94

*Casing Volume = (depth of well - initial water level) * 0.653*

Date	Time	Gallons Removed	pH (pH units)	Spec. Cond. (mS/cm)	Turbidity (N.T.U.)	DO (mg/L)	Temp (°C)	Salinity (%)	Comments (appearance of water, odor, etc)
1/17/07	1324	0	7.16	5.73	2.9	8.61	20.67	0.30	Clear, no odor, no sheen
1/17/07	1325	1	7.18	5.77	13.7	8.60	20.33	0.31	Same as previous
1/17/07	1328	3	7.20	5.73	6.5	8.63	20.28	0.30	Same as previous
1/17/07	1331	5	7.25	5.98	5.9	8.43	20.15	0.32	Same as previous
1/17/07	1334	7	7.31	5.92	8.7	8.52	20.17	0.31	Same as previous
1/17/07	1337	9	7.32	5.88	4.5	8.41	20.21	0.31	Same as previous
1/17/07	1339	11	7.30	5.89	11.4	8.39	20.13	0.31	Same as previous
1/17/07	1342	13	7.31	5.88	4.1	8.20	20.11	0.31	Same as previous
1/17/07	1345	15	7.32	5.96	12.2	8.15	20.14	0.32	Same as previous

RECORD OF SAMPLING

Sampling Method: 1.5" diam. Disposable bailer Temp: 20.14
 Date/Time of Sample: 1/17/07 @ 1345 Spec. Cond.: 5.96
 pH: 7.32
 DO: 8.15
 Salinity: 0.32

Sample Number	Container Types/preservation	Analysis
HL-3	3 VOAs / HCl	VOCs 8260
HL-3	1 250 mL / H ₂ SO ₄	TOC
HL-3	1 liter / none	Metals
HL-3		Gen Chemistry
HL-3	1 250 mL / H ₂ SO ₄	Ammonia - Nitrogen
HL-3	1 250 ml / none	Alkalinity, Total

Comments: Well on side of road next to landfill; notch and black mark on top of casing

APPENDIX B

**LABORATORY DATA, CHAIN-OF-CUSTODY, AND
LEVEL III DATA VALIDATION REPORT**

LEVEL III Data Validation Report

PROJECT: Hana Landfill
LABORATORY: Test America, Honolulu, HI
LAB NUMBER: 0701094
SAMPLES: HL-1, HL-2, HL-3, HL-4
MATRIX: Water

Analysis	Total Dissolved Solids (TDS) E160.1
Holding Time	✓
MS/MSD	Note 1
LCS (Blank Spike)	✓
Method Blanks	✓
Field Duplicates (HL-2 and HL-4)	✓
Field/Equipment Blanks	NA
Reporting Limits	✓

✓ – QC criteria were met.

Notes: 1. The sample spiked for the MS/MSD is not from this project and does not reflect the matrix of the samples

Summary:

Based on this Level III validation, these data are usable for their intended purpose. None of these data were qualified or rejected.

URS Corporation

(07HON-018 App B.doc:26536733.00003

LEVEL III Data Validation Report

PROJECT: Hana Landfill
LABORATORY: Test America, Honolulu, HI
LAB NUMBER: 0701094
SAMPLES: HL-1, HL-2, HL-3, HL-4
MATRIX: Water

Analysis	Alkalinity SM2320B
Holding Time	✓
MS/MSD	Note 1
LCS (Blank Spike)	✓
Method Blanks	✓
Field Duplicates (HL-2 and HL-4)	✓
Laboratory Duplicate	✓
Field/Equipment Blanks	NA
Reporting Limits	✓

✓ – QC criteria were met.

Notes: 1. The sample spiked as the MS is not from this project and does not reflect the matrix of these samples

Summary:

Based on this Level III validation, these data are usable for their intended purpose. None of these data were qualified or rejected.

URS Corporation

(07HON-018 App B.doc:26536733.00003

LEVEL III Data Validation Report

PROJECT: Hana Landfill
LABORATORY: Test America, Honolulu, HI
LAB NUMBER: 0701094
SAMPLES: HL-1, HL-2, HL-3, HL-4
MATRIX: Water

Analysis	Metals* 6010B
Holding Time	✓
MS/MSD	Note 1
LCS (Blank Spike)	✓
Method Blanks	Note 2
Field Duplicates (HL-2 and HL-4)	✓
Field/Equipment Blanks	NA
Reporting Limits	Note 3

*Ca, Fe, Mg, K, Na, V, Zn

✓ – QC criteria were met.

- Notes:**
1. The sample spiked for the MS/MSD is not from this project and does not reflect the matrix of these samples.
 2. Low, estimated concentrations of calcium and zinc were present in the method blank. These concentration had no affect on sample results.
 3. In all samples except HL-1 both sodium and magnesium were re-run at dilution by factors of 100. HL-1 was re-run at a dilution of 100 for sodium only.

The reporting limits for these metals were increased in proportion to the dilution factor. The reported concentrations of the metals exceeded the elevated reporting limits.

Summary:

Based on this Level III validation, these data are usable for their intended purpose. None of these data were qualified or rejected.

URS Corporation

(07HON-018 App B.doc:26536733.00003

LEVEL III Data Validation Report

PROJECT: Hana Landfill
LABORATORY: Test America, Honolulu, HI
Subcontracted to Test America, Irvine, CA
LAB NUMBER: 0701094
SAMPLES: HL-1, HL-2, HL-3, HL-4
MATRIX: Water

Analysis	Chloride, Sulfate 300.0
Holding Time	✓
MS/MSD	Note 1
LCS (Blank Spike)	✓
Method Blanks	✓
Field Duplicates (HL-2 and HL-4)	✓
Field/Equipment Blanks	NA
Reporting Limits	Note 2

✓ – QC criteria were met.

- Notes:
1. The sample spiked for the MS/MSD is not from this project and does not reflect the matrix of these samples.
 2. In order to quantitate these anions, sample HL-1 was diluted by a factor of 50 and the other three samples by factors of 100. Reporting limits were increased by the same factors. Reported concentrations exceeded the elevated reporting limits.

Summary:

Based on this Level III validation, these data are usable for their intended purpose. None of these data were qualified or rejected.

URS Corporation

(07HON-018 App B.doc:26536733.00003

LEVEL III Data Validation Report

PROJECT: Hana Landfill
LABORATORY: Test America, Honolulu, HI
Subcontracted to Test America, Irvine, CA
LAB NUMBER: 0701094
SAMPLES: HL-1, HL-2, HL-3, HL-4
MATRIX: Water

Analysis	Ammonia-N 350.3
Holding Time	✓
MS/MSD (HL-4)	✓
LCS (Blank Spike)	✓
Method Blanks	✓
Field Duplicates (HL-2 and HL-4)	✓
Field/Equipment Blanks	NA
Reporting Limits	✓

✓ – QC criteria were met.

Notes: None

Summary:

Based on this Level III validation, these data are usable for their intended purpose. None of these data were qualified or rejected.

URS Corporation

(07HON-018 App B.doc:26536733.00003

LEVEL III Data Validation Report

PROJECT: Hana Landfill
LABORATORY: Test America, Honolulu, HI
Subcontracted to Test America, Irvine, CA
LAB NUMBER: 0701094
SAMPLES: HL-1, HL-2, HL-3, HL-4
MATRIX: Water

Analysis	Total Organic Carbon (TOC) 415.1
Holding Time	✓
MS/MSD (HL-4)	Note 1
LCS (Blank Spike)	✓
Method Blanks	✓
Field Duplicates (HL-2 and HL-4)	✓
Field/Equipment Blanks	NA
Reporting Limits	✓

✓ – QC criteria were met.

Notes: 1. The sample spiked for the MS/MSD is not from this project and does not reflect the matrix of these samples.

Summary:

Based on this Level III validation, these data are usable for their intended purpose. None of these data were qualified or rejected.

URS Corporation

(07HON-018 App B.doc:26536733.00003

February 01, 2007

Vincent Pereda
URS Corporation
615 Piikoi Street, Suite 900
Honolulu, HI 96814
TEL: (808) 593-1116
FAX: (808) 593-1198

RE: Hana Landfill GW Monitoring

Dear Vincent Pereda:

Work Order No.: 0701094

TestAmerica-Honolulu, HI received/relogged 5 samples on 1/18/2007 03:00 PM for the analyses presented in the following report.

The total number of pages in the report including this Covering, Sample Summary, Case Narrative, Result Summary, QC Summary, Chain of Custody form(s), Relog Request Form or any attachment(s) is 38.

All data presented in the following report are relevant only to the samples as received and to the items tested by the laboratory. All data are calculated based on wet weight except where noted in the reporting unit. The report meets all applicable NELAP standards and shall not be reproduced except in full, without the written approval of the laboratory.

There were no problems with the analyses and all data for associated QC met laboratory specifications except where noted in the Case Narrative.

Applicable samples will be stored at no extra charge for a period of 30 days following the final report. Samples will be properly disposed of after 30 days, unless notified otherwise in writing.

If you have any questions regarding these test results, please feel free to call.

TestAmerica-Honolulu, HI



Aidan Scott
Laboratory Director

TestAmerica-Honolulu, HI 95-193 Ala Heights Drive, #121, Ala, Hawaii 96701-3900 Tel: (808) 486-5277

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Work Order Sample Summary

Client: URS Corporation
Project: Hana Landfill GW Monitoring
Work Order: 0701094
Date Received: 1/18/2007

Analytical Report for Samples

Lab Sample ID	Client Sample ID	Collection Date	Sample On Hold
0701094-01A	TRP BLANK	01/17/2007 12:45	<input type="checkbox"/>
0701094-02A	HL-1	01/17/2007 12:45	<input type="checkbox"/>
0701094-02B	HL-1	01/17/2007 12:45	<input type="checkbox"/>
0701094-02C	HL-1	01/17/2007 12:45	<input type="checkbox"/>
0701094-02D	HL-1	01/17/2007 12:45	<input type="checkbox"/>
0701094-02E	HL-1	01/17/2007 12:45	<input type="checkbox"/>
0701094-02F	HL-1	01/17/2007 12:45	<input type="checkbox"/>
0701094-03A	HL-2	01/17/2007 12:45	<input type="checkbox"/>
0701094-03B	HL-2	01/17/2007 14:45	<input type="checkbox"/>
0701094-03C	HL-2	01/17/2007 14:45	<input type="checkbox"/>
0701094-03D	HL-2	01/17/2007 14:45	<input type="checkbox"/>
0701094-03E	HL-2	01/17/2007 14:45	<input type="checkbox"/>
0701094-03F	HL-2	01/17/2007 14:45	<input type="checkbox"/>
0701094-03G	HL-2	01/17/2007 14:45	<input type="checkbox"/>
0701094-04A	HL-3	01/17/2007 13:50	<input type="checkbox"/>
0701094-04B	HL-3	01/17/2007 13:50	<input type="checkbox"/>
0701094-04C	HL-3	01/17/2007 13:50	<input type="checkbox"/>
0701094-04D	HL-3	01/17/2007 13:50	<input type="checkbox"/>
0701094-04E	HL-3	01/17/2007 13:50	<input type="checkbox"/>
0701094-04F	HL-3	01/17/2007 13:50	<input type="checkbox"/>
0701094-04G	HL-3	01/17/2007 13:50	<input type="checkbox"/>
0701094-05A	HL-4	01/17/2007 15:55	<input type="checkbox"/>
0701094-05B	HL-4	01/17/2007 15:55	<input type="checkbox"/>
0701094-05C	HL-4	01/17/2007 15:55	<input type="checkbox"/>
0701094-05D	HL-4	01/17/2007 15:55	<input type="checkbox"/>
0701094-05E	HL-4	01/17/2007 15:55	<input type="checkbox"/>
0701094-05F	HL-4	01/17/2007 15:55	<input type="checkbox"/>
0701094-05G	HL-4	01/17/2007 15:55	<input type="checkbox"/>

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Case Narrative

Client: URS Corporation
Project: Hana Landfill GW Monitoring
Work Order: 0701094

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition.
Methods for Chemical Analysis of Water and Wastes.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

Ammonia, Chloride, Sulfate, TOC analyses were performed by TestAmerica-Irvine, CA. Please find TA Irvine report attached.

Q02: The spike recovery/RPD for this QC sample is outside of established control limits due to sample matrix interference.

Q03: The percent recovery/RPD for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.

Q01: The spike recovery/RPD for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	TRIP BLANK
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 12:45
Lab ID:	0701094-01A	Matrix:	AQUEOUS

Analyte	Result	Reporting Limit	Units	Dilution Factor	Date Analyzed	Batch ID	Qual Notes
VOLATILES BY GC/MS					1/26/07 12:39:00 AM	SW8280B	
1,1,1,2-Tetrachloroethane	ND	5.00	µg/L	1			
1,1,1-Trichloroethane	ND	5.00	µg/L	1			
1,1,2,2-Tetrachloroethane	ND	5.00	µg/L	1			
1,1,2-Trichloroethane	ND	5.00	µg/L	1			
1,1-Dichloroethane	ND	5.00	µg/L	1			
1,1-Dichloroethene	ND	5.00	µg/L	1			
1,2-Dichloroethane	ND	5.00	µg/L	1			
1,2,3-Trichlorobenzene	ND	5.00	µg/L	1			
1,2,4-Trichlorobenzene	ND	5.00	µg/L	1			
1,2,6-Trichlorobenzene	ND	5.00	µg/L	1			
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	µg/L	1			
1,2-Dibromofluorene (EDB)	ND	5.00	µg/L	1			
1,2-Dichlorobenzene	ND	5.00	µg/L	1			
1,2-Dichloropropane	ND	5.00	µg/L	1			
1,3,5-Trimethylbenzene	ND	5.00	µg/L	1			
1,3-Dichlorobenzene	ND	5.00	µg/L	1			
1,4-Dichlorobenzene	ND	5.00	µg/L	1			
2,2-Dichloropropane	ND	5.00	µg/L	1			
2-Butanone	ND	25.0	µg/L	1			
2-Chlorobutyl vinyl ether	ND	25.0	µg/L	1			
2-Chlorobutane	ND	25.0	µg/L	1			
2-Hexanone	ND	5.00	µg/L	1			
4-Chlorobutane	ND	5.00	µg/L	1			
4-Isopropyltoluene	ND	5.00	µg/L	1			
4-Methyl-2-pentanone	ND	25.0	µg/L	1			
Acetone	ND	25.0	µg/L	1			
Acrylonitrile	ND	25.0	µg/L	1			
Benzene	ND	5.00	µg/L	1			
Bromobenzene	ND	5.00	µg/L	1			
Bromochloromethane	ND	5.00	µg/L	1			
Bromodichloromethane	ND	5.00	µg/L	1			
Bromobromomethane	ND	5.00	µg/L	1			
Bromomethane	ND	5.00	µg/L	1			
Carbon disulfide	ND	10.0	µg/L	1			
Carbon tetrachloride	ND	5.00	µg/L	1			
Chlorobenzene	ND	5.00	µg/L	1			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	TRIP BLANK
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 12:45
Lab ID:	0701094-01A	Matrix:	AQUEOUS

Analytes	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Analyte	Batch ID	Qual Notes
Chloroethane	ND	10.0	ppb	1				
Chloroform	ND	5.00	ppb	1				
Chloromethane	ND	10.0	ppb	1				
cis-1,2-Dichloroethane	ND	5.00	ppb	1				
cis-1,3-Dichloropropene	ND	5.00	ppb	1				
Dibromochloromethane	ND	5.00	ppb	1				
Dibromomethane	ND	5.00	ppb	1				
Dichlorodifluoromethane	ND	10.0	ppb	1				
Ethylbenzene	ND	5.00	ppb	1				
Heptachlorobutadiene	ND	5.00	ppb	1				
Iodomethane	ND	5.00	ppb	1				
Isopropylbenzene	ND	5.00	ppb	1				
m,p-Xylene	ND	5.00	ppb	1				
Methyl tert-butyl ether	ND	5.00	ppb	1				
Methylene chloride	ND	5.00	ppb	1				
n-Butylbenzene	ND	5.00	ppb	1				
n-Propylbenzene	ND	5.00	ppb	1				
Naphthalene	ND	5.00	ppb	1				
o-Xylene	ND	5.00	ppb	1				
sec-Butylbenzene	ND	5.00	ppb	1				
Styrene	ND	5.00	ppb	1				
tert-Butylbenzene	ND	5.00	ppb	1				
Tetrachloroethane	ND	5.00	ppb	1				
Toluene	ND	5.00	ppb	1				
trans-1,2-Dichloroethane	ND	5.00	ppb	1				
trans-1,3-Dichloropropene	ND	5.00	ppb	1				
trans-1,4-Dichloro-2-butene	ND	5.00	ppb	1				
Trichloroethane	ND	5.00	ppb	1				
Trichlorofluoromethane	ND	10.0	ppb	1				
Vinyl acetate	ND	5.00	ppb	1				
Vinyl chloride	ND	2.00	ppb	1				
Surr: 1,2-Dichloroethane-d4	105	50-187	%REC	1				
Surr: 4-Bromofluorobenzene	98.4	86.8-121	%REC	1				
Surr: Dibromochloromethane	105	57.8-155	%REC	1				
Surr: Toluene-d8	105	72.1-136	%REC	1				

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	• - Value exceeds Maximum Concentration Level	

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-1
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 12:45
Lab ID:	0701094-02A	Matrix:	AQUEOUS

Analytes	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Analyte	Batch ID	Qual Notes
TOTAL DISSOLVED SOLIDS	128	25.0	mg/L	1	1/22/07	E160.1	P35283	
Total Dissolved Solids (TDS)								

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	• - Value exceeds Maximum Concentration Level	

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-1
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 12:45
Lab ID:	0701094-07C	Matrix:	AQUEOUS
Analyte:	ALKALINITY		
Abbr:	Alkalinity		
Result	55.0	Reporting Limit	5.00
Units	mg/L	Units	mg/L
Dilution Factor	1	Dilution Factor	1
Prepared	1/22/2007 2:30:00 PM	Prepared	1/22/2007 2:30:00 PM
Analyte	Alkalinity	Analyte	Alkalinity
Batch ID	R13389	Batch ID	R13389

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Constituent Level	

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-1
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 12:45
Lab ID:	0701094-02D	Matrix:	AQUEOUS
Analyte:	ICP METALS, TOTAL		
Result	21500	Reporting Limit	500
Units	µg/L	Units	µg/L
Dilution Factor	1	Dilution Factor	1
Prepared	1/26/2007 12:19:23 PM	Prepared	1/26/2007 12:19:23 PM
Analyte	Calcium	Analyte	Calcium
Batch ID	14683	Batch ID	14683
Result	41.8	Reporting Limit	50.0
Units	µg/L	Units	µg/L
Dilution Factor	1	Dilution Factor	1
Prepared	1/26/2007 3:25:50 PM	Prepared	1/26/2007 3:25:50 PM
Analyte	Chromium	Analyte	Chromium
Batch ID	14683	Batch ID	14683
Result	425000	Reporting Limit	200000
Units	µg/L	Units	µg/L
Dilution Factor	1	Dilution Factor	1
Prepared	1/26/2007 12:19:23 PM	Prepared	1/26/2007 12:19:23 PM
Analyte	Vanadium	Analyte	Vanadium
Batch ID	14683	Batch ID	14683
Result	NO	Reporting Limit	20.0
Units	µg/L	Units	µg/L
Dilution Factor	1	Dilution Factor	1
Prepared	1/26/2007 12:19:23 PM	Prepared	1/26/2007 12:19:23 PM
Analyte	Zinc	Analyte	Zinc
Batch ID	14683	Batch ID	14683

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Constituent Level	

5 of 22

TestAmerica-Honolulu, HI

Date Feb 01, 2007

Result Summary

Client:	URS Corporation
Work Order:	0701094
Project:	Hana Landfill GW Monitoring
Lab ID:	0701094-02F
Client Sample ID:	HL-1
Tag Number:	
Collection Date:	01/17/2007 12:45
Matrix:	AQUEOUS

Analyte	Result	Reporting Limit	Units	Dilution Factor	Date Analyzed	Batch ID	Qual Net
VOLATILES BY GC/MS					SW1280B		
1,1,1,2-Tetrachloroethane	ND	5.00	µg/L	1	1/26/07 17:04:00	8-18-00 AM	R3314
1,1,1-Trichloroethane	ND	5.00	µg/L	1			
1,1,2,2-Tetrachloroethane	ND	5.00	µg/L	1			
1,1,2-Trichloroethane	ND	5.00	µg/L	1			
1,1-Dichloroethane	ND	5.00	µg/L	1			
1,1-Dichloroethene	ND	5.00	µg/L	1			
1,2,3-Trichlorobenzene	ND	5.00	µg/L	1			
1,2,3-Trichloropropene	ND	5.00	µg/L	1			
1,2,4-Trichlorobenzene	ND	5.00	µg/L	1			
1,2,4-Trimethylbenzene	ND	5.00	µg/L	1			
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	µg/L	1			
1,2-Dibromoethane (EDB)	ND	5.00	µg/L	1			
1,2-Dichlorobenzene	ND	5.00	µg/L	1			
1,2-Dichloroethane	ND	5.00	µg/L	1			
1,2-Dichloropropene	ND	5.00	µg/L	1			
1,3,5-Trimethylbenzene	ND	5.00	µg/L	1			
1,3-Dichlorobenzene	ND	5.00	µg/L	1			
1,4-Dichlorobenzene	ND	5.00	µg/L	1			
2,2-Dichloropropene	ND	5.00	µg/L	1			
2-Butanone	ND	25.0	µg/L	1			
2-Chloroethyl vinyl ether	ND	25.0	µg/L	1			
2-Chlorobenzene	ND	5.00	µg/L	1			
2-Hexanone	ND	25.0	µg/L	1			
4-Chlorobenzene	ND	5.00	µg/L	1			
4-Isopropyltoluene	ND	5.00	µg/L	1			
4-Methyl-2-pentanone	ND	25.0	µg/L	1			
Acetone	ND	25.0	µg/L	1			
Acrylonitrile	ND	25.0	µg/L	1			
Benzene	ND	5.00	µg/L	1			
Bromobenzene	ND	5.00	µg/L	1			
Bromochloroethane	ND	5.00	µg/L	1			
Bromodichloromethane	ND	5.00	µg/L	1			
Bromodrom	ND	5.00	µg/L	1			
Bromomethane	ND	5.00	µg/L	1			
Carbon disulfide	ND	10.0	µg/L	1			
Carbon tetrachloride	ND	5.00	µg/L	1			
Chlorobenzene	ND	5.00	µg/L	1			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

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TestAmerica-Honolulu, HI

Date Feb 01, 2007

Result Summary

Client:	URS Corporation
Work Order:	0701094
Project:	Hana Landfill GW Monitoring
Lab ID:	0701094-02F
Client Sample ID:	HL-1
Tag Number:	
Collection Date:	01/17/2007 12:45
Matrix:	AQUEOUS

Analyte	Result	Reporting Limit	Units	Dilution Factor	Date Analyzed	Batch ID	Qual Net
Chloroethane	ND	10.0	µg/L	1			
Chloroform	ND	5.00	µg/L	1			
Chloromethane	ND	10.0	µg/L	1			
de-1,2-Dichloroethane	ND	5.00	µg/L	1			
de-1,3-Dichloropropene	ND	5.00	µg/L	1			
Dibromochloromethane	ND	5.00	µg/L	1			
Dibromomethane	ND	5.00	µg/L	1			
Dichlorodifluoromethane	ND	10.0	µg/L	1			
Ethylbenzene	ND	5.00	µg/L	1			
Hexachlorobutadiene	ND	5.00	µg/L	1			
Iodomethane	ND	5.00	µg/L	1			
Isopropylbenzene	ND	5.00	µg/L	1			
m,p-Xylene	ND	5.00	µg/L	1			
Methyl tert-butyl ether	ND	5.00	µg/L	1			
Methylene chloride	ND	5.00	µg/L	1			
n-Propylbenzene	ND	5.00	µg/L	1			
Naphthalene	ND	5.00	µg/L	1			
o-Xylene	ND	5.00	µg/L	1			
sec-Butylbenzene	ND	5.00	µg/L	1			
tert-Butylbenzene	ND	5.00	µg/L	1			
Tetrachloroethane	ND	5.00	µg/L	1			
Toluene	ND	5.00	µg/L	1			
trans-1,2-Dichloroethane	ND	5.00	µg/L	1			
trans-1,3-Dichloropropene	ND	5.00	µg/L	1			
trans-1,4-Dichloro-2-butene	ND	5.00	µg/L	1			
Trichloroethane	ND	5.00	µg/L	1			
Trichlorofluoromethane	ND	10.0	µg/L	1			
Vinyl acetate	ND	5.00	µg/L	1			
Vinyl chloride	ND	5.00	µg/L	1			
Sum: 12-Dichloroethane-44	102	50-187	%REC	1			
Sum: 4-Bromochlorobenzene	99.2	88.8-121	%REC	1			
Sum: Dibromodichloromethane	103	97.8-155	%REC	1			
Sum: Toluene-48	97.8	72.1-138	%REC	1			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-2					
Work Order:	0701094	Tag Number:						
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 14:45					
Lab ID:	0701094-00A	Matrix:	AQUEOUS					
Analytes	Results	Reporting Limit	Units	Dilution Factor	Date Prepared	Analyze Date	Batch ID	Qual Notes
TOTAL DISSOLVED SOLIDS	3069	25.0	mg/L	1	1/22/07	1/23/2007 3:00:00 PM	R35283	
Total Chloride and Sulfate (ppm)						E180.1		

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-2				
Work Order:	0701094	Tag Number:					
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 14:45				
Lab ID:	0701094-00C	Matrix:	AQUEOUS				
Analytes	Reporting Results	Units	Dilution Factor	Date Prepared	Analyze	Batch ID	Qual Notes
ALKALINITY	40.0	mg/L	1	1/22/07	SM2320B		
AMMONIA TOTAL (ppm)				1/22/2007 2:30:00 PM		R35289	

Qualifiers ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits
J - Analyte detected below quantitation limits R - SPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

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Qualifiers ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits
J - Analyte detected below quantitation limits R - SPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

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Date: Feb 01, 2007

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-2					
Work Order:	0701094	Tag Number:						
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 14:45					
Lab ID:	0701094-03D	Matrix:	AQUEOUS					
Analysis	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Analyze	Batch ID	Qual/Note
ICP METALS, TOTAL								
Cadmium	41022	500	µg/L	1	1/28/07	1/28/2007 12:33:37 PM	14683	
Chromium	NO	500	µg/L	1				
Manganese	113002	5000	µg/L	100		1/28/2007 3:30:25 PM		
Nickel	21769	500	µg/L	1		1/28/2007 12:33:37 PM		
Selenium	844022	200000	µg/L	100		1/28/2007 3:30:05 PM		
Vanadium	124	10.0	µg/L	1		1/28/2007 12:33:37 PM		
Zinc	NO	20.0	µg/L	1				

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Qualifiers	<p> ND - Not Detected at the Reporting Limit J - Analyte detected below quantitation limits B - Analyte detected in the associated Method Blank * - Value exceeds Maximum Contaminant Level </p>	<p> S - Spike Recovery outside accepted recovery limits R - RPD outside accepted recovery limits E - Value above quantitation range </p>
10-0-23		

Result Summary

Client: URS Corporation		Client Sample ID: HL-2						
Work Order	0701094	Tag Number:						
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 14:45					
Lab ID:	0701094-01F	Matrix:	AQUEOUS					
Analyst	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Date Analyzed	Batch ID	Qual Notes
VOLATILES BY GC/MS								
1,1,1,2-tetrachloroethane	ND	5.00	µg/L	1	1/26/07	1/26/2007 8:05:00 AM	R35314	
1,1,1-Trichloroethane	ND	5.00	µg/L	1				
1,1,2,2-tetrachloroethane	ND	5.00	µg/L	1				
1,1,2-Trichloroethane	ND	5.00	µg/L	1				
1,1-Dichloroethane	ND	5.00	µg/L	1				
1,1-Dichloroethane	ND	5.00	µg/L	1				
1,1-Dichloropropane	ND	5.00	µg/L	1				
1,2,3-Trichlorobenzene	ND	5.00	µg/L	1				
1,2,3-Trichloropropane	ND	5.00	µg/L	1				
1,2,4-Trichlorobenzene	ND	5.00	µg/L	1				
1,2,4-Trimethylbenzene	ND	5.00	µg/L	1				
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	µg/L	1				
1,2-Dibromobenzene (EDB)	ND	5.00	µg/L	1				
1,2-Dichlorobenzene	ND	5.00	µg/L	1				
1,2-Dichloroethane	ND	5.00	µg/L	1				
1,3,5-Trimethylbenzene	ND	5.00	µg/L	1				
1,3-Dichlorobenzene	ND	5.00	µg/L	1				
1,3-Dichloropropane	ND	5.00	µg/L	1				
1,4-Dichlorobenzene	ND	5.00	µg/L	1				
2,2-Dichloropropane	ND	5.00	µg/L	1				
2-Butanone	ND	25.0	µg/L	1				
2-Chloroethyl Vinyl ether	ND	25.0	µg/L	1				
2-Chlorobenzene	ND	5.00	µg/L	1				
2-Hexanone	ND	25.0	µg/L	1				
4-Chlorobenzene	ND	5.00	µg/L	1				
4-Isopropyltoluene	ND	5.00	µg/L	1				
4-Methyl-2-pentanol	ND	25.0	µg/L	1				
Acetone	ND	25.0	µg/L	1				
Acrylonitrile	ND	25.0	µg/L	1				
Benzene	ND	5.00	µg/L	1				
Bromobenzene	ND	5.00	µg/L	1				
Bromochloroethane	ND	5.00	µg/L	1				
Bromodichloromethane	ND	5.00	µg/L	1				
Bromodimethane	ND	5.00	µg/L	1				
Bromomethane	ND	10.0	µg/L	1				
Carbon disulfide	ND	5.00	µg/L	1				
Carbon tetrachloride	ND	5.00	µg/L	1				
Chlorobenzene	ND	5.00	µg/L	1				

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Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analysis detected below quantitation limits <th>R - RPD outside accepted recovery limits</th>	R - RPD outside accepted recovery limits
	B - Analysis detected in the associated Method Blank <th>E - Value above quantization range</th>	E - Value above quantization range
	* - Value exceeds Maximum Contaminant Level	

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-3
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 14:45
Lab ID:	0701094-03F	Matrix:	AQUEOUS

Analyte	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Batch ID	Qual Notes
Chloroethane	ND	10.0	ppb	1			
Chloroform	ND	5.00	ppb	1			
Chloromethane	ND	10.0	ppb	1			
cis-1,2-Dichloroethane	ND	5.00	ppb	1			
cis-1,3-Dichloropropene	ND	5.00	ppb	1			
Dibromochloromethane	ND	5.00	ppb	1			
Dibromomethane	ND	5.00	ppb	1			
Dichlorodifluoromethane	ND	5.00	ppb	1			
Ethylbenzene	ND	10.0	ppb	1			
Heptachlorobutadiene	ND	5.00	ppb	1			
Iodomethane	ND	5.00	ppb	1			
Isopropylbenzene	ND	5.00	ppb	1			
m,p-Xylene	ND	5.00	ppb	1			
Methyl tert-butyl ether	ND	5.00	ppb	1			
Methylene chloride	ND	5.00	ppb	1			
n-Propylbenzene	ND	5.00	ppb	1			
Naphthalene	ND	5.00	ppb	1			
o-Xylene	ND	5.00	ppb	1			
sec-Butylbenzene	ND	5.00	ppb	1			
Styrene	ND	5.00	ppb	1			
tert-Butylbenzene	ND	5.00	ppb	1			
Tetrachloroethane	ND	5.00	ppb	1			
Toluene	ND	5.00	ppb	1			
trans-1,2-Dichloroethane	ND	5.00	ppb	1			
trans-1,3-Dichloropropene	ND	5.00	ppb	1			
trans-1,4-Dichloro-2-butene	ND	5.00	ppb	1			
Trichloroethane	ND	5.00	ppb	1			
Trichlorofluoromethane	ND	10.0	ppb	1			
Vinyl acetate	ND	5.00	ppb	1			
Vinyl chloride	ND	2.00	ppb	1			
Sum: 1,2-Dichloroethane-44	98.8	50-187	%REC	1			
Sum: 4-Bromochlorobenzene	102	88.8-121	%REC	1			
Sum: Dibromochloromethane	101	57.8-153	%REC	1			
Sum: Toluene-d9	99.1	72.1-138	%REC	1			

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
		* - Value exceeds Maximum Concentration Level

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-3
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 13:50
Lab ID:	0701094-04A	Matrix:	AQUEOUS

Analyte	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Batch ID	Qual Notes
TOTAL DISSOLVED SOLIDS	2449	250	mg/L	1	1/22/07 17:23:00 PM	R35283	
Iron (Dissolved Solids) (Refract)							
Fluoride							

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	A - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
		* - Value exceeds Maximum Concentration Level

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Date: Feb 01, 2007

TestAmerica-Honolulu, HI

Result Summary

Client:	URS Corporation									
Work Order:	0701094									
Project:	Hana Landfill GW Monitoring									
Lab ID:	0701094-04C									
Client Sample ID:	HL-3									
Tag Number:										
Collection Date:	01/17/2007 13:50									
Matrix:	AQUEOUS									
Analysis	Result	Reporting Limit	Units	Dilution	Date	Factor	Prepared	Analyze	Batch ID	Qual Note
ALKALINITY	88.9	5.00	mg/L	1	1/22/07	1.7272007	2:30:00 PM		R33369	
Attribute	Total Alkalinity									
	5M23370B									

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Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits	
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	
o - Value exceeds Maximum Concentration Level		

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-3
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 13:50
Lab ID:	0701094-04D	Matrix:	AQUEOUS
Analytes	Dilution	Date	Batch
ICP METALS, TOTAL	Factor	Prepared	Analyze
Calcium	500	1/25/07	1/25/2007 12:27:51 PM
Iron	50.0	1	14683
Magnesium	5000	1	
Mercury	500	1	
Sodium	200000	1	
Vanadium	10.0	1	
Zinc	20.0	1	

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Qualifiers	ND • Not Detected at the Reporting Limit	3 • Spike Recovery outside accepted recovery limits
J • Analyte detected below quantitation limits	R • RPD outside accepted recovery limits	
B • Analyte detected in the unspiked Method Blank	E • Value above quantitation range	
• Value exceeds Minimum Concentration Level		

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client: URS Corporation
 Work Order: 0701094
 Project: Hana Landfill GW Monitoring
 Lab ID: 0701094-04F

Client Sample ID: HL-3
 Tag Number:
 Collection Date: 01/17/2007 13:50
 Matrix: AQUEOUS

Analytes	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Batch ID	Qual Notes
VOLATILES BY GC/MS					1/26/07 17562007 8:32:00 AM	P35314	
1,1,1,2-Tetrachloroethane	ND	5.00	µg/L	1			
1,1,1-Trichloroethane	ND	5.00	µg/L	1			
1,1,2,2-Tetrachloroethane	ND	5.00	µg/L	1			
1,1,2-Trichloroethane	ND	5.00	µg/L	1			
1,1-Dichloroethane	ND	5.00	µg/L	1			
1,1-Dichloroethene	ND	5.00	µg/L	1			
1,1-Dichloropropane	ND	5.00	µg/L	1			
1,2,3-Trichlorobenzene	ND	5.00	µg/L	1			
1,2,4-Trichlorobenzene	ND	5.00	µg/L	1			
1,2,4-Trimethylbenzene	ND	5.00	µg/L	1			
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	µg/L	1			
1,2-Dibromobenzene (EDB)	ND	5.00	µg/L	1			
1,2-Dichlorobenzene	ND	5.00	µg/L	1			
1,2-Dichloroethane	ND	5.00	µg/L	1			
1,2-Dichloropropane	ND	5.00	µg/L	1			
1,3,5-Trimethylbenzene	ND	5.00	µg/L	1			
1,3-Dichlorobenzene	ND	5.00	µg/L	1			
1,3-Dichloropropane	ND	5.00	µg/L	1			
1,4-Dichlorobenzene	ND	5.00	µg/L	1			
2,2-Dichloropropane	ND	5.00	µg/L	1			
2-Butanone	ND	25.0	µg/L	1			
2-Chloroethyl vinyl ether	ND	25.0	µg/L	1			
2-Chlorobutane	ND	5.00	µg/L	1			
2-Pentanone	ND	25.0	µg/L	1			
4-Chlorobutane	ND	5.00	µg/L	1			
4-Isopropyltoluene	ND	5.00	µg/L	1			
4-Methyl-2-pentanone	ND	25.0	µg/L	1			
Acetone	ND	25.0	µg/L	1			
Acrylonitrile	ND	25.0	µg/L	1			
Benzene	ND	5.00	µg/L	1			
Bromobenzene	ND	5.00	µg/L	1			
Bromochloromethane	ND	5.00	µg/L	1			
Bromodichloromethane	ND	5.00	µg/L	1			
Bromofluoromethane	ND	5.00	µg/L	1			
Bromonitrile	ND	5.00	µg/L	1			
Bromomethane	ND	10.0	µg/L	1			
Carbon disulfide	ND	5.00	µg/L	1			
Carbon tetrachloride	ND	5.00	µg/L	1			
Chlorobenzene	ND	5.00	µg/L	1			

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client: URS Corporation
 Work Order: 0701094
 Project: Hana Landfill GW Monitoring
 Lab ID: 0701094-04F

Client Sample ID: HL-3
 Tag Number:
 Collection Date: 01/17/2007 13:50
 Matrix: AQUEOUS

Analytes	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Batch ID	Qual Notes
Chloroethane	ND	10.0	µg/L	1			
Chloroform	ND	5.00	µg/L	1			
Chloromethane	ND	10.0	µg/L	1			
cis-1,2-Dichloroethane	ND	5.00	µg/L	1			
cis-1,3-Dichloropropene	ND	5.00	µg/L	1			
Dibromochloromethane	ND	5.00	µg/L	1			
Dibromomethane	ND	5.00	µg/L	1			
Dichlorodifluoromethane	ND	5.00	µg/L	1			
Dichloromethane	ND	10.0	µg/L	1			
Ethylbenzene	ND	5.00	µg/L	1			
Heptachlorobenzene	ND	5.00	µg/L	1			
Iodomethane	ND	5.00	µg/L	1			
Isopropylbenzene	ND	5.00	µg/L	1			
m,p-Xylene	ND	5.00	µg/L	1			
Methyl tert-butyl ether	ND	5.00	µg/L	1			
Methylene chloride	ND	5.00	µg/L	1			
n-Butylbenzene	ND	5.00	µg/L	1			
n-Propylbenzene	ND	5.00	µg/L	1			
Naphthalene	ND	5.00	µg/L	1			
o-Xylene	ND	5.00	µg/L	1			
sec-Butylbenzene	ND	5.00	µg/L	1			
Styrene	ND	5.00	µg/L	1			
tert-Butylbenzene	ND	5.00	µg/L	1			
Tetrachloroethane	ND	5.00	µg/L	1			
Toluene	ND	5.00	µg/L	1			
trans-1,2-Dichloroethane	ND	5.00	µg/L	1			
trans-1,3-Dichloropropene	ND	5.00	µg/L	1			
trans-1,4-Dichloro-2-butene	ND	5.00	µg/L	1			
Trichloroethene	ND	5.00	µg/L	1			
Trichlorofluoromethane	ND	10.0	µg/L	1			
Vinyl acetate	ND	5.00	µg/L	1			
Vinyl chloride	ND	2.00	µg/L	1			
Sum: 1,2-Dichloroethane-d4	102	50-187	%REC	1			
Sum: 4-Bromofluorobenzene	99.8	88.8-121	%REC	1			
Sum: Dibromodifluoromethane	102	57.8-155	%REC	1			
Sum: Toluene-d8	101	72.1-136	%REC	1			

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-4
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 15:55
Lab ID:	0701094-05A	Matrix:	AQUEOUS
Analyte:	TOTAL DISSOLVED SOLIDS	Reporting Limit	25.0 mg/L
	Exceeds	Result	29.8
		Units	mg/L
		Dilution Factor	1
		Date Prepared	1/23/2007 3:00:00 PM
		Batch ID	R35283
		Qual Note	E160.1

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	o - Value exceeds Maximum Columnar Level	

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-4
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 15:55
Lab ID:	0701094-05C	Matrix:	AQUEOUS
Analyte:	ALKALINITY	Reporting Limit	8.00 mg/L
	Alkalinity Total/CalcCO2	Result	88.9
		Units	mg/L
		Dilution Factor	1
		Date Prepared	1/23/2007 2:30:00 PM
		Batch ID	R35299
		Qual Note	SM2320B

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	o - Value exceeds Maximum Columnar Level	

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-4
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 15:55
Lab ID:	0701094-05D	Matrix:	AQUEOUS

Analyte	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Date Analyzed	Batch ID	Qual Note
ICP METALS, TOTAL					SW3015	SW6010B		
Cadmium	41100	500	ppb	1	1/26/07	1/26/2007 12:32:05 PM	14863	
Iron	ND	50.0	ppb	1				
Aluminum	115000	5000	ppb	100	1/26/2007	2:50:26 PM		
Potassium	21000	500	ppb	1	1/26/2007	12:32:05 PM		
Sodium	215000	200000	ppb	100	1/26/2007	2:50:26 PM		
Manganese	10.8	10.0	ppb	1	1/26/2007	12:32:05 PM		
Zinc	ND	20.0	ppb	1				

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client:	URS Corporation	Client Sample ID:	HL-4
Work Order:	0701094	Tag Number:	
Project:	Hana Landfill GW Monitoring	Collection Date:	01/17/2007 15:55
Lab ID:	0701094-05F	Matrix:	AQUEOUS

Analyte	Result	Reporting Limit	Units	Dilution Factor	Date Prepared	Date Analyzed	Batch ID	Qual Note
VOLATILES BY GC/MS					SW1260B			
1,1,1,2-Tetrachloroethane	ND	5.00	ppb	1	1/26/07	1/26/2007 9:59:00 AM	R35314	
1,1,1-Trichloroethane	ND	5.00	ppb	1				
1,1,2,2-Tetrachloroethane	ND	5.00	ppb	1				
1,1,2-Trichloroethane	ND	5.00	ppb	1				
1,1-Dichloroethane	ND	5.00	ppb	1				
1,1-Dichloroethene	ND	5.00	ppb	1				
1,2-Dichloropropane	ND	5.00	ppb	1				
1,2,3-Trichlorobenzene	ND	5.00	ppb	1				
1,2,3-Trichloropropane	ND	5.00	ppb	1				
1,2,4-Trichlorobenzene	ND	5.00	ppb	1				
1,2,4-Trifluorobenzene	ND	5.00	ppb	1				
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	ppb	1				
1,2-Dichloroethane (EDS)	ND	5.00	ppb	1				
1,2-Dichlorobenzene	ND	5.00	ppb	1				
1,2-Dichloroethene	ND	5.00	ppb	1				
1,2-Dichloropropane	ND	5.00	ppb	1				
1,3,5-Trifluorobenzene	ND	5.00	ppb	1				
1,3-Dichlorobenzene	ND	5.00	ppb	1				
1,3-Dichloropropane	ND	5.00	ppb	1				
1,4-Dichlorobenzene	ND	5.00	ppb	1				
2,2-Dichloropropane	ND	5.00	ppb	1				
2-Butanone	ND	25.0	ppb	1				
2-Chloroethyl vinyl ether	ND	25.0	ppb	1				
2-Chlorobutene	ND	5.00	ppb	1				
2-Hexanone	ND	25.0	ppb	1				
4-Chlorobutene	ND	5.00	ppb	1				
4-Isopropyltoluene	ND	5.00	ppb	1				
4-Methyl-2-pentanone	ND	25.0	ppb	1				
Acetone	ND	25.0	ppb	1				
Acrylonitrile	ND	25.0	ppb	1				
Benzene	ND	5.00	ppb	1				
Bromobenzene	ND	5.00	ppb	1				
Bromochloroethane	ND	5.00	ppb	1				
Bromodichloromethane	ND	5.00	ppb	1				
Bromodimethylmethane	ND	5.00	ppb	1				
Bromomethane	ND	10.0	ppb	1				
Carbon disulfide	ND	5.00	ppb	1				
Carbon tetrachloride	ND	5.00	ppb	1				
Chlorobenzene	ND	5.00	ppb	1				

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
		* - Value exceeds Maximum Contaminant Level

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Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
		* - Value exceeds Maximum Contaminant Level

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

Result Summary

Client: URS Corporation		Client Sample ID: HL4	
Work Order: 0701094		Tag Number:	
Project: Hana Landfill GW Monitoring		Collection Date: 01/17/2007 15:55	
Lab ID: 0701094-05F		Matrix: AQUEOUS	
Analyte	Result	Reporting Limit	Units
Chloroethane	ND	10.0	µg/L
Chloroform	ND	5.00	µg/L
Chloromethane	ND	10.0	µg/L
cis-1,2-Dichloroethane	ND	5.00	µg/L
cis-1,3-Dichloropropene	ND	5.00	µg/L
Dibromochloromethane	ND	5.00	µg/L
Dibromomethane	ND	5.00	µg/L
Dichlorodifluoromethane	ND	10.0	µg/L
Ethylbenzene	ND	5.00	µg/L
Hexachlorobutadiene	ND	5.00	µg/L
Iodomethane	ND	5.00	µg/L
Isopropylbenzene	ND	5.00	µg/L
m,p-Xylene	ND	5.00	µg/L
Methyl tert-butyl ether	ND	5.00	µg/L
Methylene chloride	ND	5.00	µg/L
n-Butylbenzene	ND	5.00	µg/L
n-Propylbenzene	ND	5.00	µg/L
Naphthalene	ND	5.00	µg/L
o-Xylene	ND	5.00	µg/L
sec-Butylbenzene	ND	5.00	µg/L
Styrene	ND	5.00	µg/L
tert-Butylbenzene	ND	5.00	µg/L
Tetrachloroethene	ND	5.00	µg/L
Toluene	ND	5.00	µg/L
trans-1,2-Dichloroethane	ND	5.00	µg/L
trans-1,3-Dichloropropene	ND	5.00	µg/L
trans-1,4-Dichloro-2-butene	ND	5.00	µg/L
Trichloroethene	ND	5.00	µg/L
Trichlorofluoromethane	ND	10.0	µg/L
Vinyl acetate	ND	5.00	µg/L
Vinyl chloride	ND	2.00	µg/L
Sum: 1,2-Dichlorobutane-d4	102	50-187	%REC
Sum: 4-Bromochlorobenzene	102	66.6-121	%REC
Sum: Dibromodichloromethane	102	57.6-155	%REC
Sum: Toluene-d8	103	72.1-136	%REC

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	A - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary
Method Blank

Client: URS Corporation													
Work Order: 0701094													
Project: Hana Landfill GW Monitoring													
Sample ID: MBL01260012507	Batch ID: R13314	Test Code: SW123456	Prep Date: 1/26/2007	Units: µg/L									
Client ID:	Run ID: MBL01260012508	%REC	%SEC	RelVal	RPD	RelVal	RPD	Units	Qual	Notes			
Analyte	Result	POI	DF	Spike Value	Spike RelVal	%REC	Units	RPD	RelVal	RPD	Units	Qual	Notes
1,1,1,2-Tetrachloroethane	ND	5.0	1										
1,1,1-Trichloroethane	ND	5.0	1										
1,1,2,2-Tetrachloroethane	ND	5.0	1										
1,1,2-Trichloroethane	ND	5.0	1										
1,1-Dichloroethane	ND	5.0	1										
1,1-Dichloropropene	ND	5.0	1										
1,2,3-Trichlorobenzene	ND	5.0	1										
1,2,3-Trichloropropene	ND	5.0	1										
1,2,4-Trichlorobenzene	ND	5.0	1										
1,2,4-Trifluorobenzene	0.31	5.0	1										
1,2-Dibromo-3-chloropropane (EDB)	ND	5.0	1										
1,2-Dibromobenzene	ND	5.0	1										
1,2-Dichlorobenzene	ND	5.0	1										
1,2-Dichloropropene	ND	5.0	1										
1,3,5-Trifluorobenzene	ND	5.0	1										
1,3-Dichlorobenzene	ND	5.0	1										
1,4-Dichlorobenzene	1.2	5.0	1										
2,2-Dichloropropene	ND	5.0	1										
2-Butanone	ND	25	1										
2-Chloroethyl vinyl ether	ND	25	1										
2-Chlorobutane	ND	8.0	1										
2-Hexanone	ND	25	1										
4-Chlorobutane	ND	5.0	1										
4-Isopropyltoluene	0.85	5.0	1										
4-Methyl-2-pentanone	ND	25	1										
Acetone	ND	25	1										
Acrylonitrile	ND	25	1										
Benzene	ND	5.0	1										
Bromobenzene	ND	5.0	1										
Bromochloromethane	ND	5.0	1										
Bromodichloromethane	ND	5.0	1										
Bromodibromomethane	ND	5.0	1										
Bromomethane	ND	10	1										

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside established recovery limits
	J - Analyte detected below quantitation limits <th>R - RPD outside established recovery limits</th>	R - RPD outside established recovery limits
	B - Analyte detected in the associated Method Blank <th>DF - Dilution Factor</th>	DF - Dilution Factor
	%REC - % Recovery <th>RPD - Relative Percent Difference</th>	RPD - Relative Percent Difference

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary
Method Blank

Client:	URS Corporation			
Work Order:	0701094			
Project:	Hana Landfill GW Monitoring			
Carbon disulfide	ND	5.0	1	
Carbon tetrachloride	ND	5.0	1	
Chlorobenzene	ND	5.0	1	
Chloroethane	ND	10	1	
Chloroform	ND	5.0	1	
Chloromethane	ND	10	1	
cis-1,2-Dichloroethane	ND	5.0	1	
cis-1,3-Dichloropropene	ND	5.0	1	
Dibromochloromethane	ND	5.0	1	
Dibromomethane	ND	5.0	1	
Dichlorodifluoromethane	ND	10	1	
Ethylbenzene	0.18	5.0	1	J
Heptachlorobutadiene	ND	5.0	1	
Iodomethane	ND	5.0	1	
Isopropylbenzene	ND	5.0	1	
m,p-Xylene	0.47	5.0	1	J
Methyl tert-butyl ether	ND	5.0	1	
Methylene chloride	ND	5.0	1	
n-Butylbenzene	ND	5.0	1	
n-Propylbenzene	ND	5.0	1	J
Naphthalene	0.25	5.0	1	
o-Xylene	ND	5.0	1	
sec-Butylbenzene	ND	5.0	1	
Styrene	ND	5.0	1	
tert-Butylbenzene	ND	5.0	1	
Tetrachloroethane	ND	5.0	1	
Toluene	1.98	5.0	1	J
trans-1,2-Dichloroethane	ND	5.0	1	
trans-1,3-Dichloropropene	ND	5.0	1	
trans-1,4-Dichloro-2-butene	ND	5.0	1	
Trichloroethane	ND	5.0	1	
Trichlorofluoromethane	ND	10	1	
Vinyl acetate	ND	5.0	1	
Vinyl chloride	ND	2.0	1	
Sum: 1,2-Dichloroethane-d4	48.82	0	1	50
Sum: 4-Bromochlorobenzene	50.81	0	1	50
Sum: Dibromochloromethane	49.29	0	1	50
Sum: Toluene-d8	51.05	0	1	50
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Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside established recovery limit
	J - Analyte detected below quantitation limit	R - RPD outside established recovery limit
	B - Analyte detected in the associated Method Blank	DF - Dilution Factor
	WREC - % Recovery	RPD - Relative Percent Difference

2

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary
Method Blank

Client: URS Corporation

Work Order: 0701094

Project: Hana Landfill GW Monitoring

Sample ID: BLK012207	Batch ID: RJ3218	Test Code: 8M123108	Prep Date: 1/22/2007	Units: mg/L					
Client ID:		Run ID: ORH1_070122A	Analysis Date: 1/22/2007	Notes:					
Analysis	Result	POL	DF	Spike Value	Ref Val	%REC	Limit	RPD	RPD
Alkalinity, Total (As CaCO3)	ND	5.0	1						
Sample ID: MB-14483	Batch ID: 14483	Test Code: 8W60108	Prep Date: 1/26/2007	Units: µg/L					
Client ID:		Run ID: ICP2_070123B	Analysis Date: 1/24/2007	Notes:					
Analysis	Result	POL	DF	Spike Value	Ref Val	%REC	Limit	RPD	RPD
Calcium	25.88	500	1						
Iron	ND	50	1						
Magnesium	ND	50	1						
Potassium	ND	500	1						
Sodium	ND	2000	1						
Vanadium	ND	10	1						
Zinc	2.185	20	1						
Sample ID: BLK012287	Batch ID: RJ3218	Test Code: E182.1	Prep Date: 1/22/2007	Units: mg/L					
Client ID:		Run ID: MET1_070122B	Analysis Date: 1/23/2007	Notes:					
Analysis	Result	POL	DF	Spike Value	Ref Val	%REC	Limit	RPD	RPD
Total Dissolved Solids (Residue)	ND	25	1						

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside established recovery limit
	J - Analyte detected below quantitation limit	R - RPD outside established recovery limit
	B - Analyte detected in the associated Method Blank	DF - Dilution Factor
	WREC - % Recovery	RPD - Relative Percent Difference

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary
Sample Matrix Spike

Client:	URS Corporation
Work Order:	0701094
Project:	Hana Landfill GW Monitoring
Sample ID:	0701081-01A MS
Batch ID:	R13219
Test Code:	SM23208
Run ID:	ORH1_070122A
Prep Date:	1/22/2007
Analysis Date:	1/22/2007
Units:	mg/L
Notes:	
Analysis:	
Alkylbenzene, Total (As CaCO3)	220
Result	220
POL	5.0
DF	1
Value	20
Spike	236
RelVal	-40
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Diethylbenzene	47.12
Diethylbenzene	50.77
Ethylbenzene	41.14
Heptachlorobenzene	41.46
Isopropylbenzene	45
m,p-Xylene	65.51
Methylene chloride	32.57
n-Propylbenzene	48.04
Naphthalene	45.97
o-Xylene	44.44
sec-Butylbenzene	41.48
Styrene	44.82
tert-Butylbenzene	43.15
Tetrachloroethane	48.69
Toluene	41.47
trans-1,2-Dichloroethane	48.35
trans-1,3-Dichloropropene	48.19
Trichloroethane	39.63
Trichloroethene	47.14
Vinyl chloride	31.22
Sum: 1,2-Dichloroethane-d4	135.7
Sum: 4-Bromofluorobenzene	52.42
Sum: Dibromochloromethane	48.66
Sum: Toluene-d8	50.92
Sum: Toluene-d8	48.48
Result	48.48
POL	5.0
DF	1
Value	20
Spike	236
RelVal	-40
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analysis detected below quantitation limits
B - Analysis detected in the associated Method Blank
%REC - % Recovery

S - Spike Recovery outside established recovery limit
R - RPD outside established recovery limits
DF - Dilution Factor
RPD - Relative Percent Difference

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary
Sample Matrix Spike

Client:	URS Corporation
Work Order:	0701094
Project:	Hana Landfill GW Monitoring
Sample ID:	0701081-02D MS
Batch ID:	14883
Test Code:	SW68108
Run ID:	ICP2_070125B
Prep Date:	1/26/2007
Analysis Date:	1/26/2007
Units:	µg/L
Notes:	
Analysis:	
Cadmium	34140
Result	34140
POL	500
DF	1
Value	10000
Spike	24000
RelVal	93.4
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Iron	11810
Result	11810
POL	50
DF	1
Value	10000
Spike	3112
RelVal	93.7
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Magnesium	12480
Result	12480
POL	500
DF	1
Value	10000
Spike	4010
RelVal	84.1
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Potassium	12420
Result	12420
POL	2000
DF	1
Value	10000
Spike	21340
RelVal	94.7
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Sodium	30800
Result	30800
POL	10
DF	1
Value	1000
Spike	1235
RelVal	89.5
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Vanadium	907.8
Result	907.8
POL	20
DF	1
Value	1000
Spike	681
RelVal	90.3
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Zinc	1584
Result	1584
POL	20
DF	1
Value	1000
Spike	681
RelVal	96.1
%REC	80
Units	120
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Sample ID:	0701081-02D MS
Batch ID:	14883
Test Code:	SW68108
Run ID:	ICP2_070125B
Prep Date:	1/26/2007
Analysis Date:	1/26/2007
Units:	µg/L
Notes:	
Analysis:	
Cadmium	35210
Result	35210
POL	500
DF	1
Value	10000
Spike	24000
RelVal	104
%REC	80
Units	120
RPD	3.07
RPD Limit	20
Qual	S
Note	Q02
Iron	13710
Result	13710
POL	50
DF	1
Value	10000
Spike	2256
RelVal	115
%REC	80
Units	120
RPD	18.8
RPD Limit	20
Qual	S
Note	Q02
Magnesium	12370
Result	12370
POL	500
DF	1
Value	10000
Spike	3112
RelVal	98.6
%REC	80
Units	120
RPD	3.84
RPD Limit	20
Qual	S
Note	Q02
Potassium	13080
Result	13080
POL	500
DF	1
Value	10000
Spike	4010
RelVal	90.7
%REC	80
Units	120
RPD	5.19
RPD Limit	20
Qual	S
Note	Q02
Sodium	31170
Result	31170
POL	2000
DF	1
Value	10000
Spike	21340
RelVal	98.4
%REC	80
Units	120
RPD	3.08
RPD Limit	20
Qual	S
Note	Q02
Vanadium	927
Result	927
POL	10
DF	1
Value	1000
Spike	1235
RelVal	92.4
%REC	80
Units	120
RPD	3.19
RPD Limit	20
Qual	S
Note	Q02
Zinc	1642
Result	1642
POL	20
DF	1
Value	1000
Spike	681
RelVal	96.1
%REC	80
Units	120
RPD	3.64
RPD Limit	20
Qual	S
Note	Q02
Sample ID:	0701081-01A MS
Batch ID:	R13213
Test Code:	E186.1
Run ID:	MET1_070122B
Prep Date:	1/22/2007
Analysis Date:	1/22/2007
Units:	mg/L
Notes:	
Analysis:	
Total Dissolved Solids (Residue)	4184
Result	4184
POL	25
DF	1
Value	1000
Spike	3148
RelVal	104
%REC	75
Units	125
RPD	0
RPD Limit	0
Qual	S
Note	Q02
Sample ID:	0701081-01A MS
Batch ID:	R13213
Test Code:	E186.1
Run ID:	MET1_070122B
Prep Date:	1/22/2007
Analysis Date:	1/22/2007
Units:	mg/L
Notes:	
Analysis:	
Total Dissolved Solids (Residue)	4158
Result	4158
POL	25
DF	1
Value	1000
Spike	3148
RelVal	101
%REC	75
Units	125
RPD	4184
RPD Limit	0.023
Qual	S
Note	Q02

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analysis detected below quantitation limits
B - Analysis detected in the associated Method Blank
%REC - % Recovery

S - Spike Recovery outside established recovery limit
R - RPD outside established recovery limits
DF - Dilution Factor
RPD - Relative Percent Difference

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Date: Feb 01, 2007

TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary
Laboratory Control Spike

Client:	URS Corporation										
Work Order:	0701094										
Project:	Hana Landfill GW Monitoring										
Sample ID: LC8826013507	Batch ID: R35314	Test Code: 31982608	Run ID: MSDA_0701258	Print Date:	12/2/2007	Units:	µg/L				
Client ID:				Analysis Date:	12/2/2007	Notes:					
Analyte	Result	POL	DF	Spk Valve	Spk Gain	%REC Units	%REC Units	RFD RelVal	RFD Units	RFD Units	Notes
1,1,1,2-Tetrachloroethane	47.89	5.0	1	50	0	95.8	79.11	0	0		
1,1,1-Trichloroethane	52.3	5.0	1	50	0	105	65.121	0	0		
1,1,2,2-Tetrachloroethane	50.3	5.0	1	50	0	101.74	133	0	0		
1,1,2-Trichloroethane	49.84	5.0	1	50	0	99.7	82.119	0	0		
1,1-Dichloroethane	51.85	5.0	1	50	0	104	85.115	0	0		
1,1-Dichloroethane	49.3	5.0	1	50	0	99.6	78.131	0	0		
1,1-Dichloropropene	50.3	5.0	1	50	0	101.84	112	0	0		
1,2,3-Trichlorobenzene	55.67	5.0	1	50	0	111.70	121	0	0		
1,2,3-Trichloropropene	45.47	5.0	1	50	0	90.8	79.130	0	0		
1,2,4-Trichlorobenzene	55.86	5.0	1	50	0	112.71	127	0	0		
1,2,4,7-Tetrachlorobenzene	54.22	5.0	1	50	0.31	108.79	121	0	0		
1,2-Dichlorobenzene	53.75	5.0	1	50	0	106.87	109	0	0		
1,2-Dichlorobenzene	54.24	5.0	1	50	0	108.62	125	0	0		
1,2-Dichlorobenzene	55.06	5.0	1	50	0	110.76	131	0	0		
1,3,5-Trimethylbenzene	54.12	5.0	1	50	0	108.81	121	0	0		
1,3-Dichlorobenzene	54.44	5.0	1	50	0	109.86	110	0	0		
1,3-Dichloropropene	48.43	5.0	1	50	1.2	94.5	83.124	0	0		
1,4-Dichlorobenzene	55.96	5.0	1	50	0	112.87	110	0	0		
2,2-Dichloropropene	52.81	5.0	1	50	0	106.87	128	0	0		
2-Chlorobenzene	54.52	5.0	1	50	0	109.82	114	0	0		
4-Chlorobenzene	51.66	5.0	1	50	0	107.81	115	0	0		
4-Isopropylbenzene	49.6	5.0	1	50	0.85	97.5	77.117	0	0		
Benzene	58.41	5.0	1	50	0	113.84	123	0	0		
Bromobenzene	53.24	5.0	1	50	0	106.85	119	0	0		
Bromochloromethane	53.35	5.0	1	50	0	107.84	117	0	0		
Bromodichloromethane	54.8	5.0	1	50	0	110.74	120	0	0		
Bromoforn	48.07	5.0	1	50	0	96.1	75.123	0	0		
Bromomethane	55.77	10	1	50	0	112.18	111	0	0		
Carbon tetrachloride	52.14	5.0	1	50	0	104.68	120	0	0		
Chlorobenzene	48.23	5.0	1	50	0	98.5	85.111	0	0		
Chloroethane	48.45	10	1	50	0	96.9	78.134	0	0		
Chloroform	54.52	5.0	1	50	0	109.78	112	0	0		
Chloromethane	61.15	10	1	50	0	122.48	118	0	0		
cis-1,2-Dichloroethane	52.61	5.0	1	50	0	105.90	117	0	0		
cis-1,3-Dichloropropene	51.85	5.0	1	50	0	103.78	125	0	0		
Dibromochloromethane	51.6	5.0	1	50	0	103.79	115	0	0		

QC Summary

Client:	UTS Corporation										
Work Order:	0701094										
Project:	Hans Landfill GW Monitoring										
Dibromomethane	52.83	5.0	1	50	0	106	80	122	0	S	q01
Dichlorodibromomethane	66.81	10	1	50	0	134	48	109	0		
Ethylbenzene	50.79	5.0	1	50	0.18	101	81	119	0		
Heptachlorobutadiene	63.34	5.0	1	50	0	107	67	121	0		
Isopropylbenzene	54.31	5.0	1	50	0	109	82	121	0		
m,p-Xylene	98.18	5.0	1	100	0.47	97.7	82	119	0		
Methylene chloride	52.78	5.0	1	50	0	106	85	118	0	S	q01
n-Butylbenzene	55.62	5.0	1	50	0	112	85	111	0		
n-Propylbenzene	53.28	5.0	1	50	0	107	85	119	0		
Naphthalene	54.85	5.0	1	50	0.25	109	52	148	0		
o-Xylene	48.09	5.0	1	50	0	97.4	80	119	0		
sec-Butylbenzene	52.78	5.0	1	50	0	106	85	113	0		
Styrene	49.47	5.0	1	50	0	98.9	66	122	0		
tert-Butylbenzene	54.29	5.0	1	50	0	109	83	110	0		
Trichloromethane	49.07	5.0	1	50	0	98.1	58	136	0		
Toluene	53.93	5.0	1	50	1.98	104	84	119	0		
trans-1,2-Dichloroethene	53.38	5.0	1	50	0	107	85	118	0		
trans-1,3-Dichloropropene	45.69	5.0	1	50	0	91.4	70	118	0		
Trichloroethene	55.17	5.0	1	50	0	110	83	108	0		
Trichloromethane	49.58	10	1	50	0	99.2	54	135	0		
Vinyl chloride	50.57	2.0	1	50	0	101	62	128	0		
Sum: 1,2-Dichloroethane-d4	48.68	0	1	50	0	97.3	81	128	0		
Sum: 4-Bromodibromomethane	48.24	0	1	50	0	96.5	84	122	0		
Sum: Dibromodibromomethane	50.69	0	1	50	0	101	82	110	0		
Sum: Toluene-d8	49.82	0	1	50	0	96.8	90	112	0		

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside established recovery limit
J - Analysis detected below quantitation limits <td>R - RPD outside established recovery limits</td> <td></td>	R - RPD outside established recovery limits	
B - Analysis detected in the associated Method Blank	DP - Dilution Factor	
%REC - % Recovery	RPD - Relative Percent Difference	

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Qualifiers	ND - Not Detected at the Reporting Limit	S - Split Recovery outside established recovery limit
J - Analyte detected below quantitation limits		R - RPD outside established recovery limits
B - Analyte detected in the associated Method Blank		DF - Dilution Factor
%REC - % Recovery		RPD - Relative Percent Difference

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary

Laboratory Control Spike Duplicate

Client:	URS Corporation
Work Order:	0701094
Project:	Hana Landfill GW Monitoring

Sample ID:	Batch ID:	Test Code:	Run ID:	MSD4_0701258	Prep Date:	Analysis Date:	Units:	Notes:
LCSD120012507	R35314	8W12408			1/26/2007	1/26/2007	pp/L	
Analyte	Result	POL	DF	Spike Value	RelVal	%REC	RPD	RPD Line Qual
1,1,1,2-Tetrachloroethane	47.68	5.0	1	50	0	94.4	78	111
1,1,1-Trichloroethane	50.39	5.0	1	50	0	101	85	121
1,1,2,2-Tetrachloroethane	53.28	5.0	1	50	0	107	74	133
1,1,2-Trichloroethane	49.5	5.0	1	50	0	99	82	119
1,1-Dichloroethane	50.82	5.0	1	50	0	101	85	115
1,1-Dichloroethene	48.73	5.0	1	50	0	93.5	78	131
1,1-Dichloropropane	48.84	5.0	1	50	0	97.3	84	112
1,2,3-Trichlorobenzene	51.75	5.0	1	50	0	104	70	121
1,2,3-Trichloropropane	48.08	5.0	1	50	0	96.2	79	130
1,2,4-Trichlorobenzene	51.2	5.0	1	50	0	102	71	127
1,2,4-Trichloropropane	53.2	5.0	1	50	0.31	108	78	121
1,2-Dichlorobenzene	52.46	5.0	1	50	0	105	87	109
1,2-Dichloropropane	54.28	5.0	1	50	0	109	82	125
1,3,5-Trimethylbenzene	54.82	5.0	1	50	0	109	78	131
1,3-Dichlorobenzene	55.56	5.0	1	50	0	111	81	121
1,3-Dichloropropane	53.43	5.0	1	50	0	107	86	110
1,4-Dichlorobenzene	48.91	5.0	1	50	1.2	91.4	83	124
1,4-Dichloropropane	54.59	5.0	1	50	0	109	87	110
2,2-Dichloropropane	52.41	5.0	1	50	0	105	57	128
2-Chlorobenzene	54.05	5.0	1	50	0	108	82	114
4-Chlorobenzene	52.84	5.0	1	50	0	108	81	115
4-Isopropylbenzene	48.88	5.0	1	50	0.85	98.1	77	117
Benzene	55.81	5.0	1	50	0	112	84	123
Bromobenzene	52.22	5.0	1	50	0	104	85	119
Bromochlorobenzene	53.42	5.0	1	50	0	107	84	117
Bromodichlorobenzene	55.03	5.0	1	50	0	110	74	120
Bromotoluene	49.01	5.0	1	50	0	98.7	75	123
Carbon tetrachloride	58.43	10	1	50	0	117	18	111
Chlorobenzene	50.87	5.0	1	50	0	102	68	120
Chloroethane	47.54	5.0	1	50	0	95.1	85	111
Chloroform	50.82	10	1	50	0	101	78	134
Chloromethane	53.59	5.0	1	50	0	107	78	112
cis-1,2-Dichloroethene	65.54	10	1	50	0	131	48	118
dis-1,2-Dichloroethene	51.44	5.0	1	50	0	103	90	117
dis-1,3-Dichloropropane	48.85	5.0	1	50	0	97.7	78	125
Dibromochlorobenzene	52.2	5.0	1	50	0	104	78	115

Qualifiers	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside established recovery limit
	J - Analyte detected below quantitation limits	R - RPD outside established recovery limits
	B - Analyte detected in the associated Method Blank	DF - Dilution Factor
	%REC - % Recovery	RPD - Relative Percent Difference

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TestAmerica-Honolulu, HI

Date: Feb 01, 2007

QC Summary

Laboratory Control Spike Duplicate

Client:	URS Corporation
Work Order:	0701094
Project:	Hana Landfill GW Monitoring

Sample ID:	Batch ID:	Test Code:	Run ID:	MSD4_0701258	Prep Date:	Analysis Date:	Units:	Notes:
LCSD120012507	R35314	8W12408			1/26/2007	1/26/2007	pp/L	
Analyte	Result	POL	DF	Spike Value	RelVal	%REC	RPD	RPD Line Qual
1,1,1,2-Tetrachloroethane	53.87	5.0	1	50	0	107	80	122
1,1,1-Trichloroethane	71.47	5.0	1	50	0	143	48	106
1,1,2,2-Tetrachloroethane	48.84	5.0	1	50	0.18	97.3	81	119
1,1,2-Trichloroethane	47.47	5.0	1	50	0	94.9	87	121
1,1-Dichloroethane	52.32	5.0	1	50	0	105	82	121
1,1-Dichloroethene	48.74	5.0	1	50	0.47	97.4	82	119
1,2,3-Trichlorobenzene	52.75	5.0	1	50	0	99.5	83	118
1,2,3-Trichloropropane	52.68	5.0	1	50	0	108	85	111
1,2,4-Trichlorobenzene	52.36	5.0	1	50	0	105	83	119
1,2,4-Trichloropropane	48.44	5.0	1	50	0.25	104	52	148
1,3,5-Trimethylbenzene	50.54	5.0	1	50	0	96.9	80	119
1,3-Dichlorobenzene	48.99	5.0	1	50	0	101	85	113
1,3-Dichloropropane	52.78	5.0	1	50	0	98	86	122
1,4-Dichlorobenzene	47.63	5.0	1	50	0	106	83	110
1,4-Dichloropropane	49.71	5.0	1	50	0	95.3	86	136
2,2-Dichloropropane	52.89	5.0	1	50	1.98	95.5	84	118
2-Chlorobenzene	47.11	5.0	1	50	0	94.2	70	116
4-Chlorobenzene	53.5	5.0	1	50	0	106	85	118
4-Isopropylbenzene	51.99	10	1	50	0	107	83	108
Benzene	52.81	2.0	1	50	0	104	54	135
Bromobenzene	50.46	0	1	50	0	108	82	128
Bromochlorobenzene	48.97	0	1	50	0	101	81	128
Bromodichlorobenzene	51.59	0	1	50	0	99.9	84	122
Bromotoluene	48.41	0	1	50	0	103	82	110
Carbon tetrachloride						98.8	80	112

Sample ID: LC9012107	Batch ID: R3218	Test Code: 8123208	Prep Date: 1/23/2007	Units: mg/L								
Card ID:		Run ID: ORN1_070122A	Analysis Date: 1/23/2007	Notes:								
Analysis	Result	POL	DF	Spike Value	Spike RefVal	%REC	Units	%REC	RPD	RPD Units	Qual	Notes
Concentration, Total (As CaCO3)	17	5.0	1	50								

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TestAmerica

ANALYTICAL TESTING CORPORATION

13441 Deane Avenue, Suite 100, Irvine, CA 92618 (949) 261-1022 Fax: (949) 266-2297

LABORATORY REPORT

Prepared For: TestAmerica - Honolulu, HI
99-193 Alsea Heights Dr. #121
Alsea, HI 96701
Attention: Alden Scott

Project: Network Pricing
0701094

Sampled: 01/17/07
Received: 01/23/07
Issued: 01/20/07 15:51

NELAP #01108CA

The results listed within this Laboratory Report pertain only to the samples as sent to the laboratory. The samples contained in this report were performed in accordance with the applicable certification as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, if present, is included and is an integral part of this report.

This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID
IQA2204-01
IQA2204-02
IQA2204-03
IQA2204-04

MATRIX
Water
Water
Water
Water

TestAmerica

ANALYTICAL TESTING CORPORATION

13441 Deane Avenue, Suite 100, Irvine, CA 92618 (949) 261-1022 Fax: (949) 266-2297

TestAmerica - Honolulu, HI
99-193 Alsea Heights Dr. #121
Alsea, HI 96701
Attention: Alden Scott

Project ID: Network Pricing
0701094
Report Number: IQA2204

Sampled: 01/17/07
Received: 01/23/07

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Date Qualifiers
Sample ID: IQA2204-01 (0701094-01 - Water)								
Reporting Unit: mg/l								
Ammonia-N	EPA 350.3	7A23121	0.50	ND	1	1/23/2007	1/23/2007	
Chloride	EPA 300.0	7A24071	25	750	50	1/24/2007	1/24/2007	
Sulfate	EPA 300.0	7A24071	25	98	50	1/24/2007	1/24/2007	
Total Organic Carbon	EPA 415.1	7A25094	1.0	1.5	1	1/23/2007	1/23/2007	
Sample ID: IQA2204-02 (0701094-02 - Water)								
Reporting Unit: mg/l								
Ammonia-N	EPA 350.3	7A23121	0.50	ND	1	1/23/2007	1/23/2007	
Chloride	EPA 300.0	7A24071	50	1700	100	1/24/2007	1/24/2007	
Sulfate	EPA 300.0	7A24071	50	240	100	1/24/2007	1/24/2007	
Total Organic Carbon	EPA 415.1	7A25094	1.0	1.8	1	1/23/2007	1/23/2007	
Sample ID: IQA2204-03 (0701094-03 - Water)								
Reporting Unit: mg/l								
Ammonia-N	EPA 350.3	7A23121	0.50	ND	1	1/23/2007	1/23/2007	
Chloride	EPA 300.0	7A24071	50	1600	100	1/24/2007	1/24/2007	
Sulfate	EPA 300.0	7A24071	50	210	100	1/24/2007	1/24/2007	
Total Organic Carbon	EPA 415.1	7A25094	1.0	2.2	1	1/23/2007	1/23/2007	
Sample ID: IQA2204-04 (0701094-04 - Water)								
Reporting Unit: mg/l								
Ammonia-N	EPA 350.3	7A23121	0.50	ND	1	1/23/2007	1/23/2007	
Chloride	EPA 300.0	7A24071	50	1800	100	1/24/2007	1/24/2007	
Sulfate	EPA 300.0	7A24071	50	240	100	1/24/2007	1/24/2007	
Total Organic Carbon	EPA 415.1	7A25094	1.0	1.2	1	1/23/2007	1/23/2007	

TestAmerica - Irvine, CA
Lena Davidkova
Project Manager

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IQA2204 - Page 2 of 6

Reviewed By:



TestAmerica - Irvine, CA
Lena Davidkova
Project Manager

IQA2204 - Page 1 of 6

TestAmerica

ANALYTICAL TESTING CORPORATION

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TestAmerica - Honolulu, HI
99-193 Alaka Heights Dr. #121
Aiea, HI 96701
Attention: Alden Scott

Project ID: Network Pricing
0701094
Report Number: IQA2204

Sampled: 01/17/07
Received: 01/23/07

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limit	%REC	RPD Limit	RPD	Data Qualifiers
Batch: 7A14071, Extracted: 01/24/07										
Blank Analyzed: 01/24/07 (7A14071-BLN1)	ND	0.50	mg/l							
Chloride	ND	0.50	mg/l							
Sulfate	4.66	0.50	mg/l	5.00	93	90-110				
LCS Analyzed: 01/24/07 (7A14071-B51)	9.38	0.50	mg/l	10.0	94	90-110				
Chloride	13.2	0.50	mg/l	5.00	7.9	106	90-120			
Sulfate	30.3	0.50	mg/l	10.0	20	103	80-120			
Matrix Spike Analyzed: 01/24/07 (7A14071-M51)										
Chloride	13.1	0.50	mg/l	5.00	7.9	104	90-120	1	20	
Sulfate	30.1	0.50	mg/l	10.0	20	101	80-120	1	20	
Matrix Spike Dup Analyzed: 01/24/07 (7A14071-M1SD1)										
Chloride	13.1	0.50	mg/l	5.00	7.9	104	90-120	1	20	
Sulfate	30.1	0.50	mg/l	10.0	20	101	80-120	1	20	
Batch: 7A15094, Extracted: 01/25/07										
Blank Analyzed: 01/25/07 (7A15094-BLN1)	ND	1.0	mg/l							
Total Organic Carbon	9.70	1.0	mg/l	10.0	97	90-110				
LCS Analyzed: 01/25/07 (7A15094-B51)	5.21	1.0	mg/l	5.00	ND	104	80-120			
Total Organic Carbon	5.21	1.0	mg/l	5.00	ND	104	80-120			
Matrix Spike Analyzed: 01/25/07 (7A15094-M51)										
Total Organic Carbon	5.27	1.0	mg/l	5.00	ND	105	80-120	1	20	
Matrix Spike Dup Analyzed: 01/25/07 (7A15094-M1SD1)										
Total Organic Carbon	5.27	1.0	mg/l	5.00	ND	105	80-120	1	20	

TestAmerica - Irvine, CA
Lena Davidkova
Project Manager

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IQA2204 <Page 3 of 6>

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ANALYTICAL TESTING CORPORATION

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TestAmerica - Honolulu, HI
99-193 Alaka Heights Dr. #121
Aiea, HI 96701
Attention: Alden Scott

Project ID: Network Pricing
0701094
Report Number: IQA2204

Sampled: 01/17/07
Received: 01/23/07

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limit	%REC	RPD Limit	RPD	Data Qualifiers
Batch: 7A15111, Extracted: 01/25/07										
Blank Analyzed: 01/25/07 (7A15111-BLN1)	ND	0.50	mg/l							
Ammonia-N	1.07	0.50	mg/l	1.00	107	15-115				
LCS Analyzed: 01/25/07 (7A15111-B51)	1.82	0.50	mg/l	2.00	ND	91	75-125			
Ammonia-N	1.82	0.50	mg/l	2.00	ND	91	75-125			
Matrix Spike Analyzed: 01/25/07 (7A15111-M51)										
Ammonia-N	1.89	0.50	mg/l	3.00	ND	94	75-125	4	15	
Matrix Spike Dup Analyzed: 01/25/07 (7A15111-M1SD1)										
Ammonia-N	1.89	0.50	mg/l	3.00	ND	94	75-125	4	15	

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TestAmerica - Honolulu, HI
99-193 Alaka Heights Dr. #121
Alaka, HI 96701
Attention: Aidan Scott

Project ID: Network Pricing
0701094
Report Number: IQA2204

Sampled: 01/17/07
Received: 01/23/07

DATA QUALIFIERS AND DEFINITIONS

ND Analyze NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica

ANALYTICAL TESTING CORPORATION

17441 Dorian Avenue, Suite 100, Irvine, CA 92616 (949) 261-1822 Fax (949) 266-3397

TestAmerica - Honolulu, HI
99-193 Alaka Heights Dr. #121
Alaka, HI 96701
Attention: Aidan Scott

Project ID: Network Pricing
0701094
Report Number: IQA2204

Sampled: 01/17/07
Received: 01/23/07

Certification Summary

TestAmerica - Irvine, CA

Methad	Miscs	Nides	Havell
EPA 300.0	Water	X	
EPA 350.3	Water	X	
EPA 415.1	Water	X	

Needs and NELAP provide analyze specific accreditations. Analyze specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericahawaii.com

TestAmerica - Irvine, CA
Lena Davidkova
Project Manager

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IQA2204 <Page 5 of 6>

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Lena Davidkova
Project Manager

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IQA2204 <Page 6 of 6>

TestAmerica-Honolulu, HI

99-193 Area Heights Drive

Suite 121

Ave. Homan Heights, Hawaii

Phone (808) 444-1227

Fax (808) 444-1228

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

OAL Work Order: 0701094

Project Name: URS Corporation

Hana Landfill GW Monitoring

Report To: Aidan Scott

Due Date: 5/2/07

Subcontractor:

Del Mar Irvine
17461 Dorian Avenue

TEL: (949) 261-1022

FAX: (949) 261-1228

Irvine, CA 92614

Acc #:

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests			
				E323.2	E350.3	E375.4	E415.1
0701094-02B	Aqueous	1/17/2007 12:45:00 PM	250NU	1		1	
0701094-02E	Aqueous	1/17/2007 12:45:00 PM	250VOAJ-GS04				
0701094-02G	Aqueous	1/17/2007 12:45:00 PM	250MLH-GS04				
0701094-03B	Aqueous	1/17/2007 2:45:00 PM	250NU	1		1	
0701094-03E	Aqueous	1/17/2007 2:45:00 PM	250VOAJ-GS04				
0701094-03G	Aqueous	1/17/2007 2:45:00 PM	250MLH-GS04				
0701094-04B	Aqueous	1/17/2007 1:50:00 PM	250NU	1		1	
0701094-04E	Aqueous	1/17/2007 1:50:00 PM	250VOAJ-GS04				
0701094-04G	Aqueous	1/17/2007 1:50:00 PM	250MLH-GS04				
0701094-05B	Aqueous	1/17/2007 3:55:00 PM	250NU	1		1	
0701094-05E	Aqueous	1/17/2007 3:55:00 PM	250VOAJ-GS04				
0701094-05G	Aqueous	1/17/2007 3:55:00 PM	250MLH-GS04				

Comments: Please analyze these samples FOR CHLORIDE, SULFATE, TOTAL ORGANIC CARBON, AND AMMONIA.

PD-1/23/07
1438

Relinquished by:

Relinquished by:

Date/Time

1/22/07

Received by:

Received by:

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Date/Time

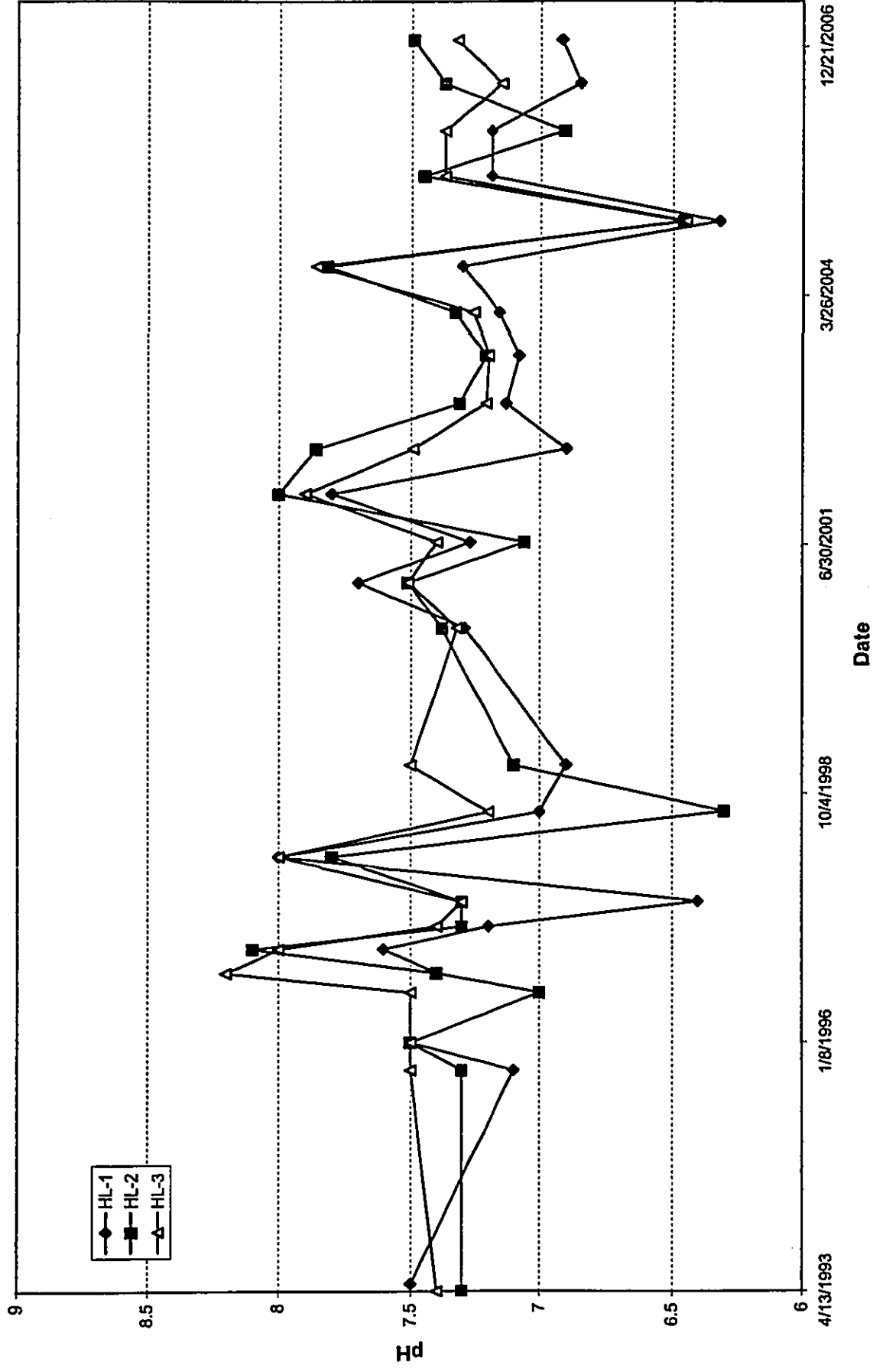
1/23/07

13:10

(V)

APPENDIX C
MONITORING PARAMETER CONCENTRATION GRAPHS

HANA LANDFILL pH (pH Units)

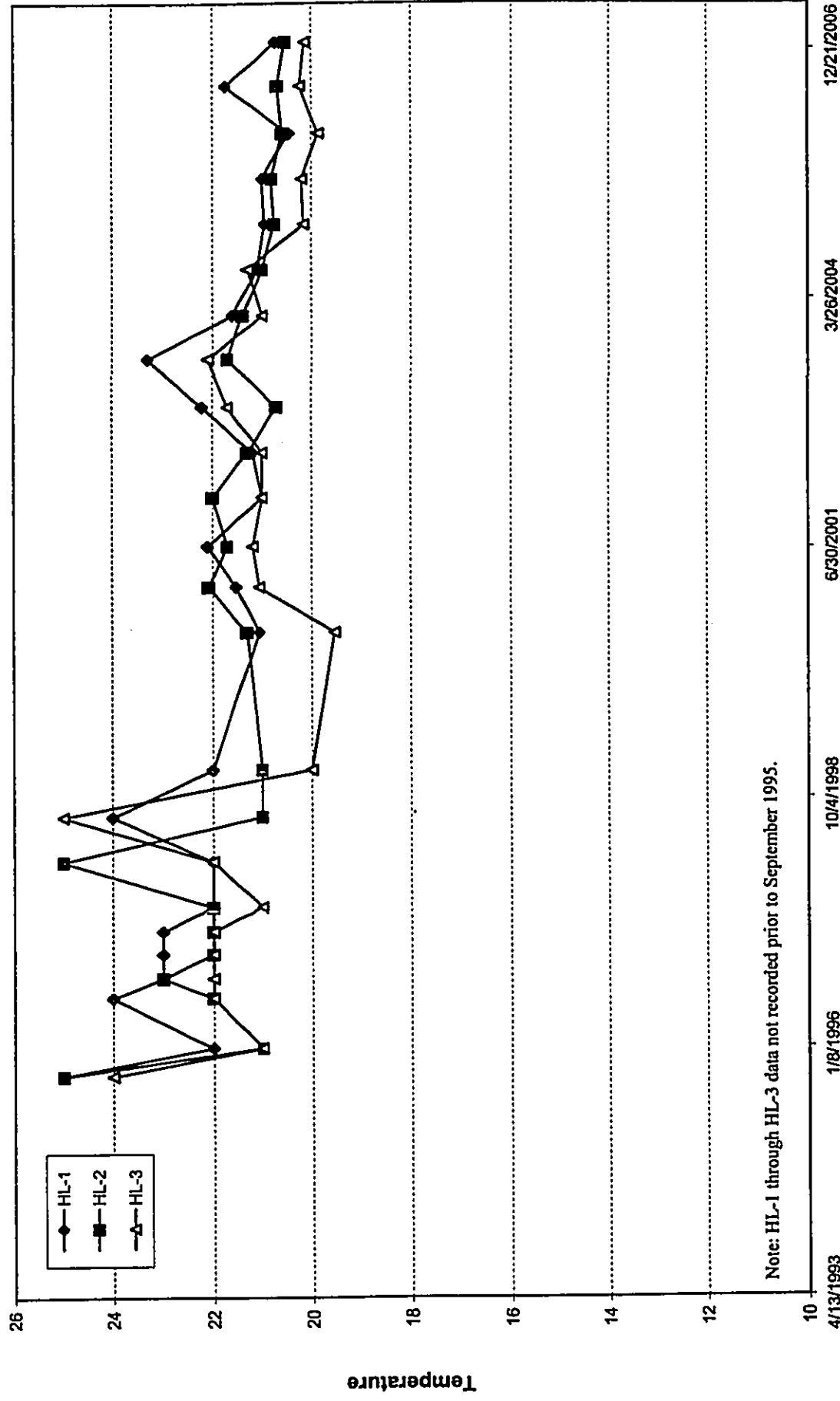


URS

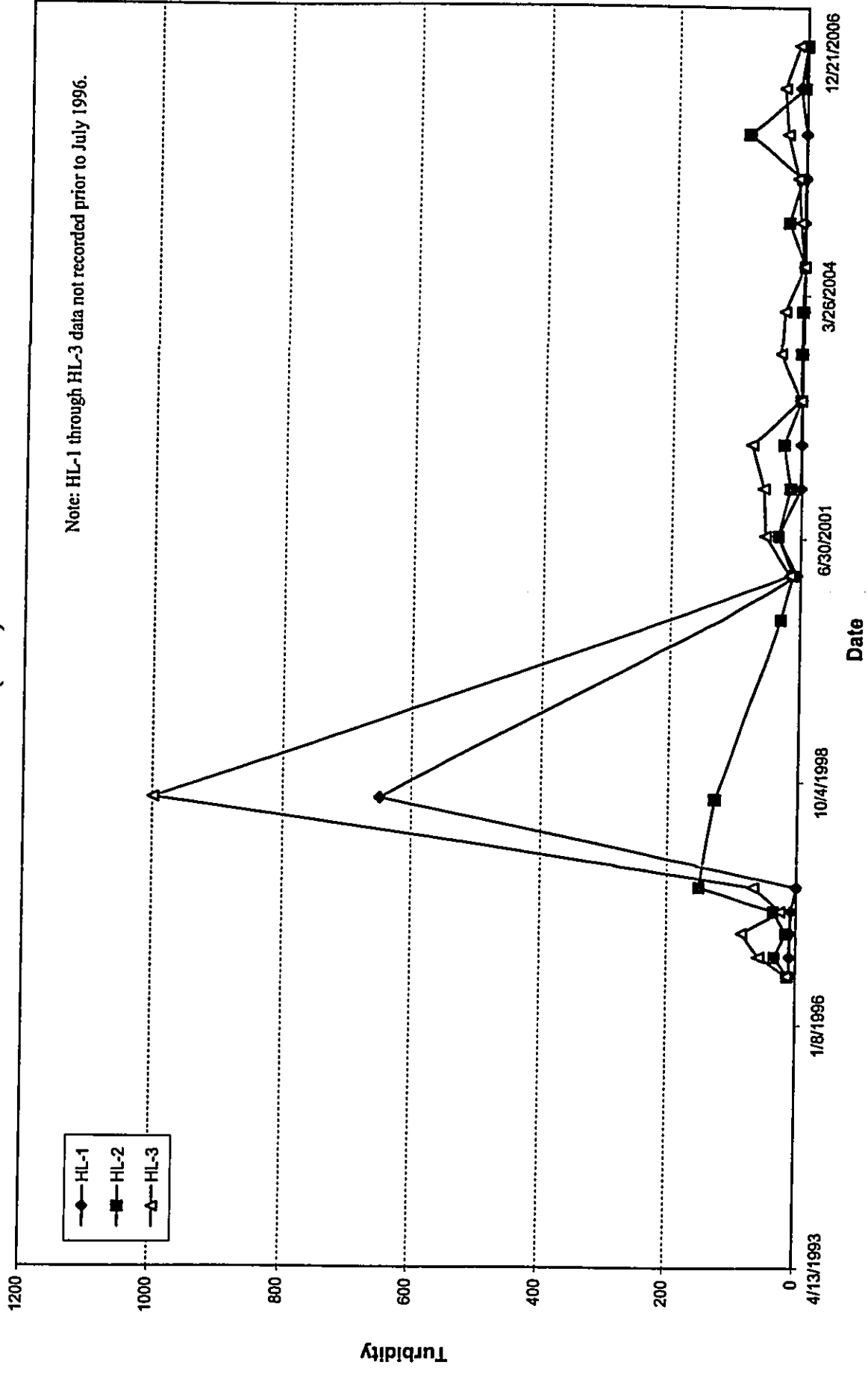
C-1

(07HON-018.xls:26536733.00003)

HANA LANDFILL TEMPERATURE (Degrees Centigrade)



HANA LANDFILL TURBIDITY (NTU)

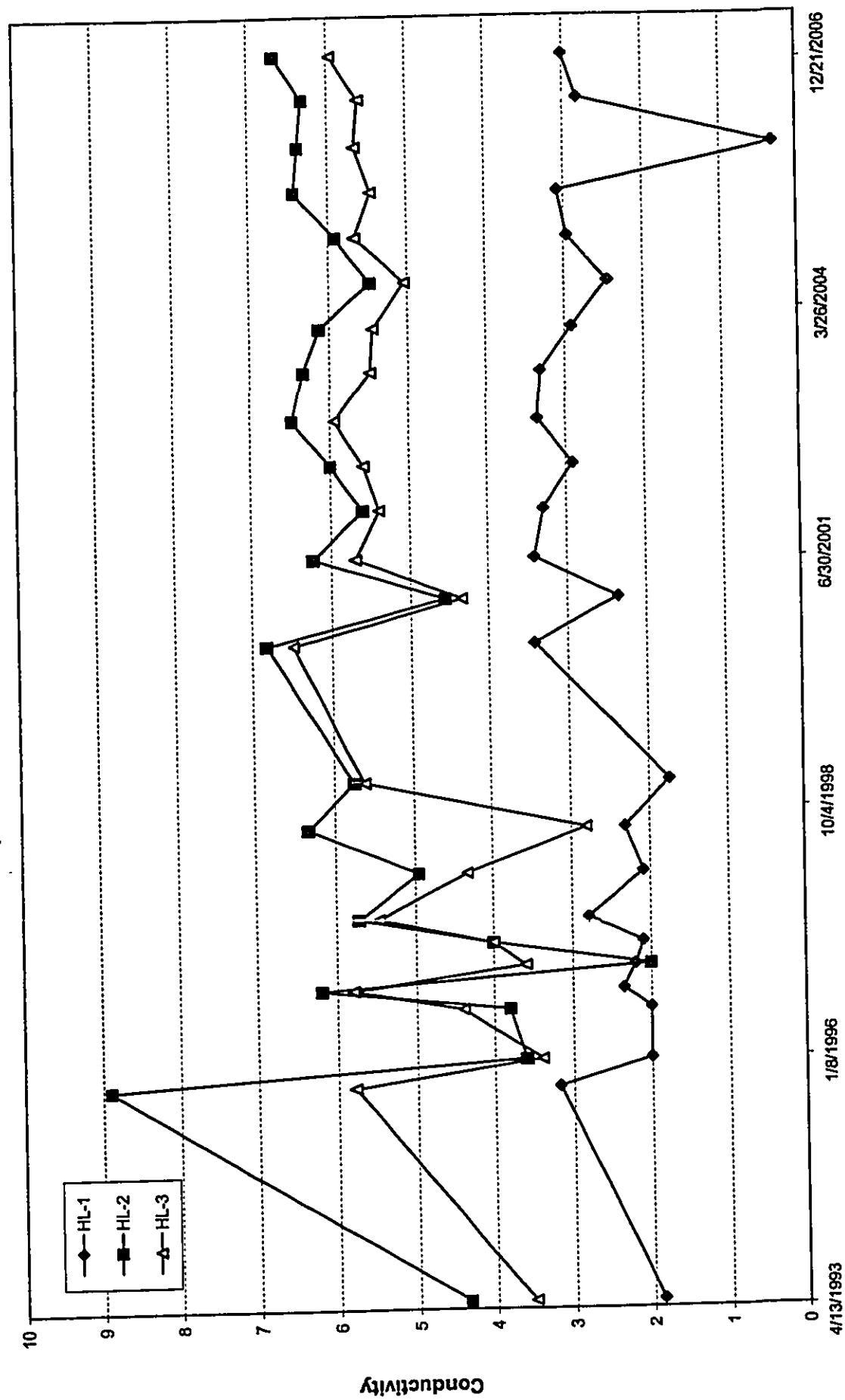


URS

C-3

(07HON-018.xls:26536733.00003)

HANA LANDFILL SPECIFIC CONDUCTIVITY (Millisiemens Per Centimeter)

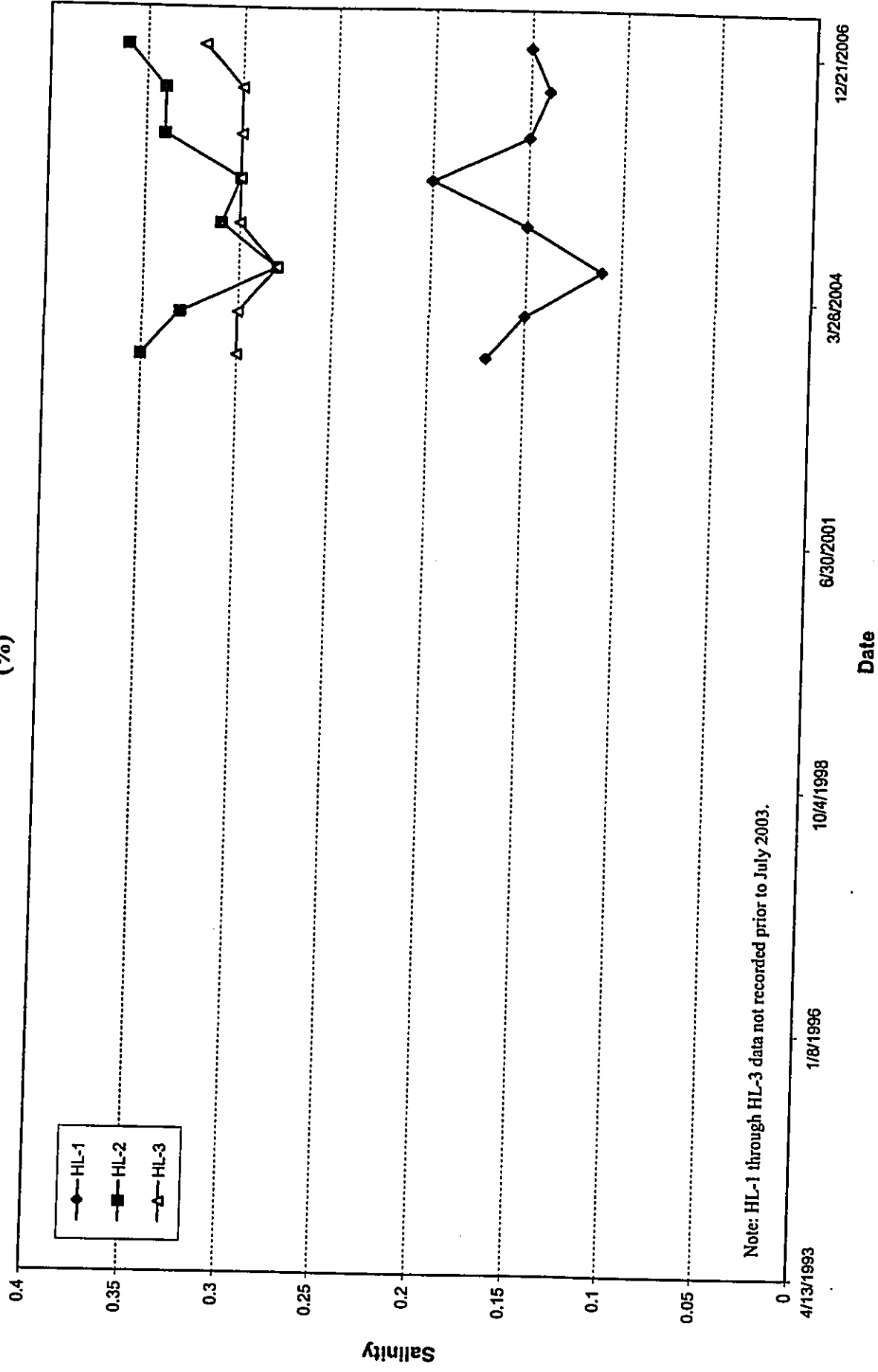


(07HON-018.xls:26536733.00003)

C-4

URS

HANA LANDELL SALINITY (%)

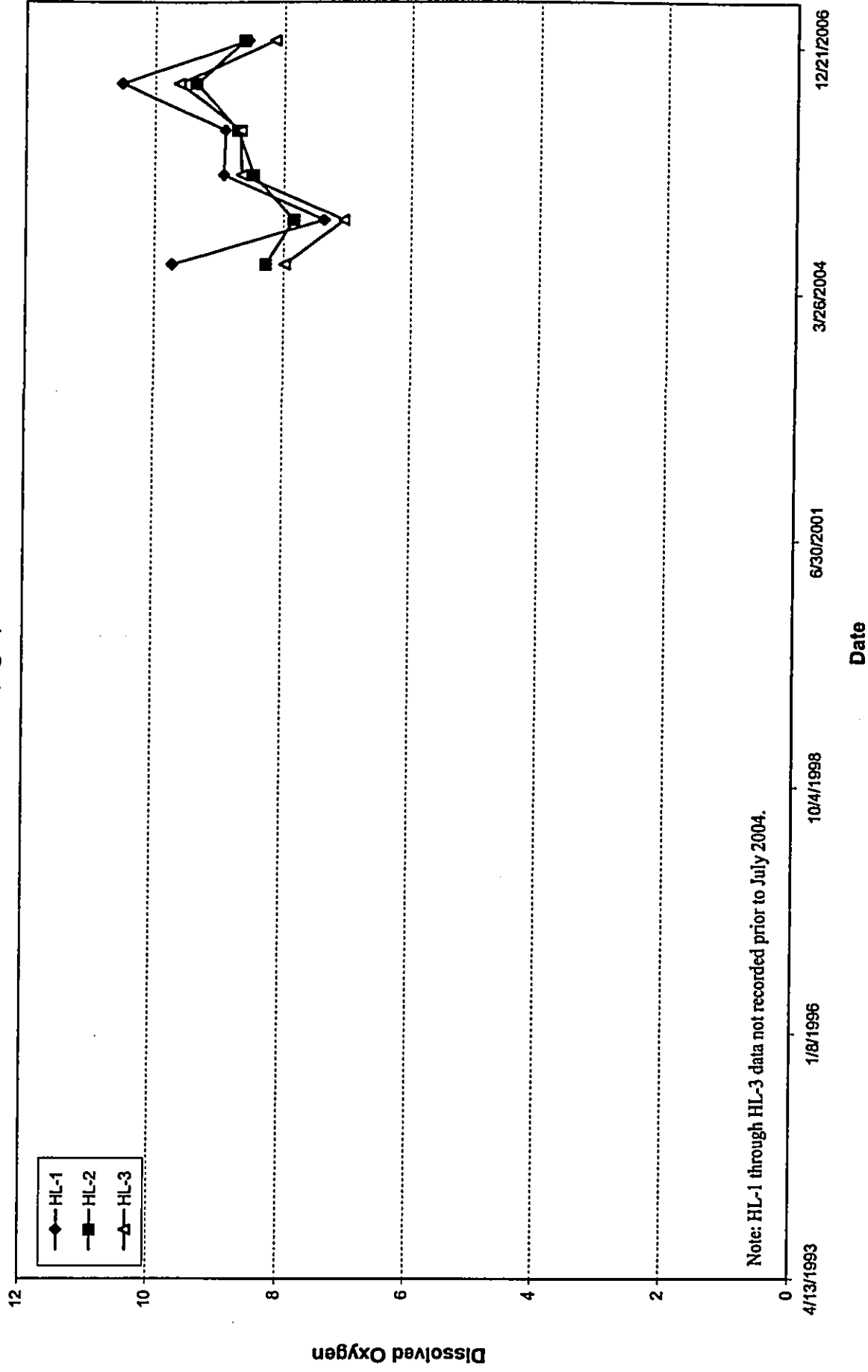


URS

C-5

(07HON-018.xls:26536733.00003)

HANA LANDFILL DISSOLVED OXYGEN (mg/L)

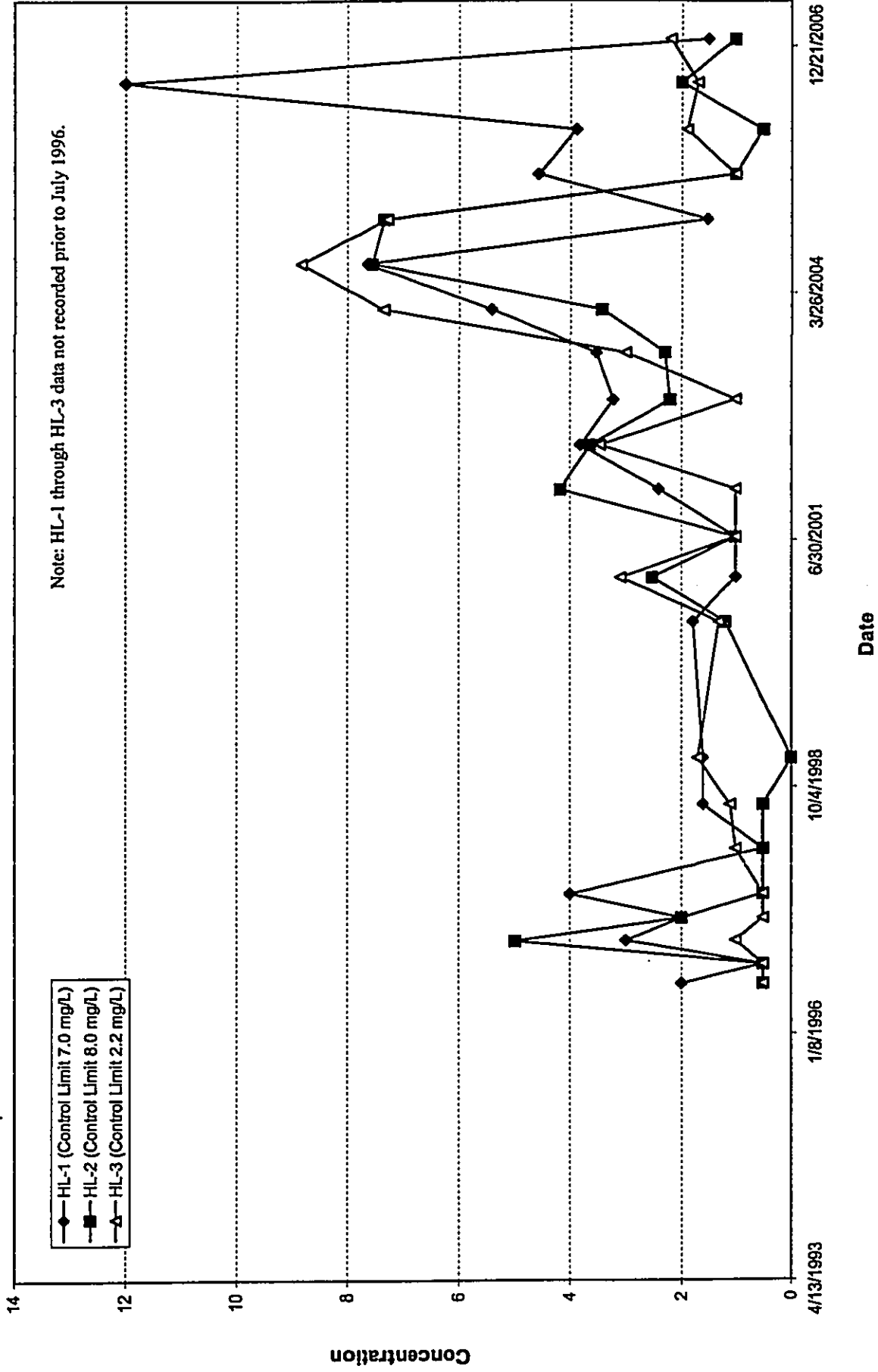


URS

C-6

(07HON-018.xls:26536733.00003)

HANA LANDFILL TOTAL ORGANIC CARBON CONCENTRATIONS (mg/L)

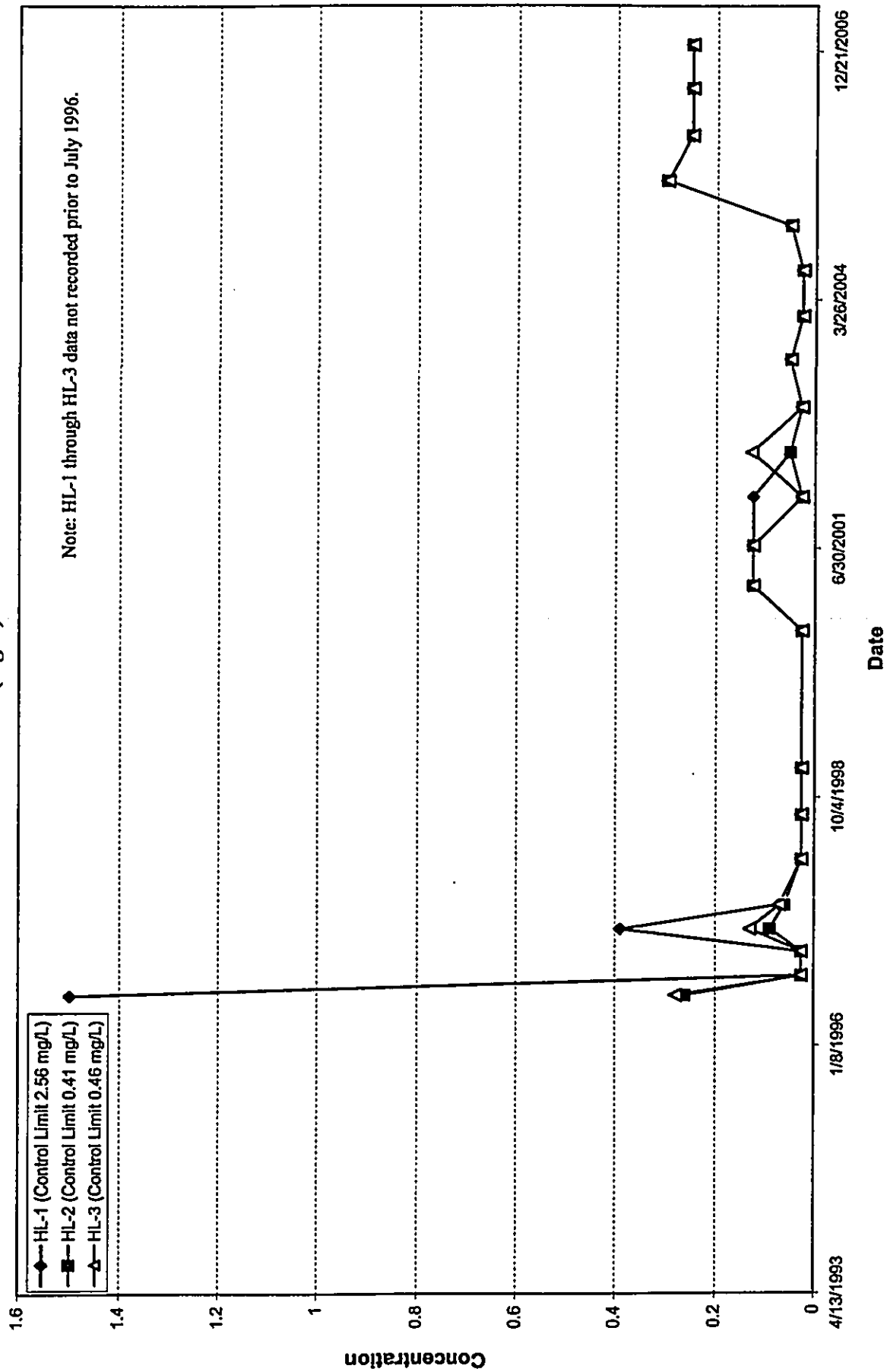


URS

C-7

(07HON-018.xls:26536733.00003)

HANA LANDFILL AMMONIA-N CONCENTRATIONS (mg/L)

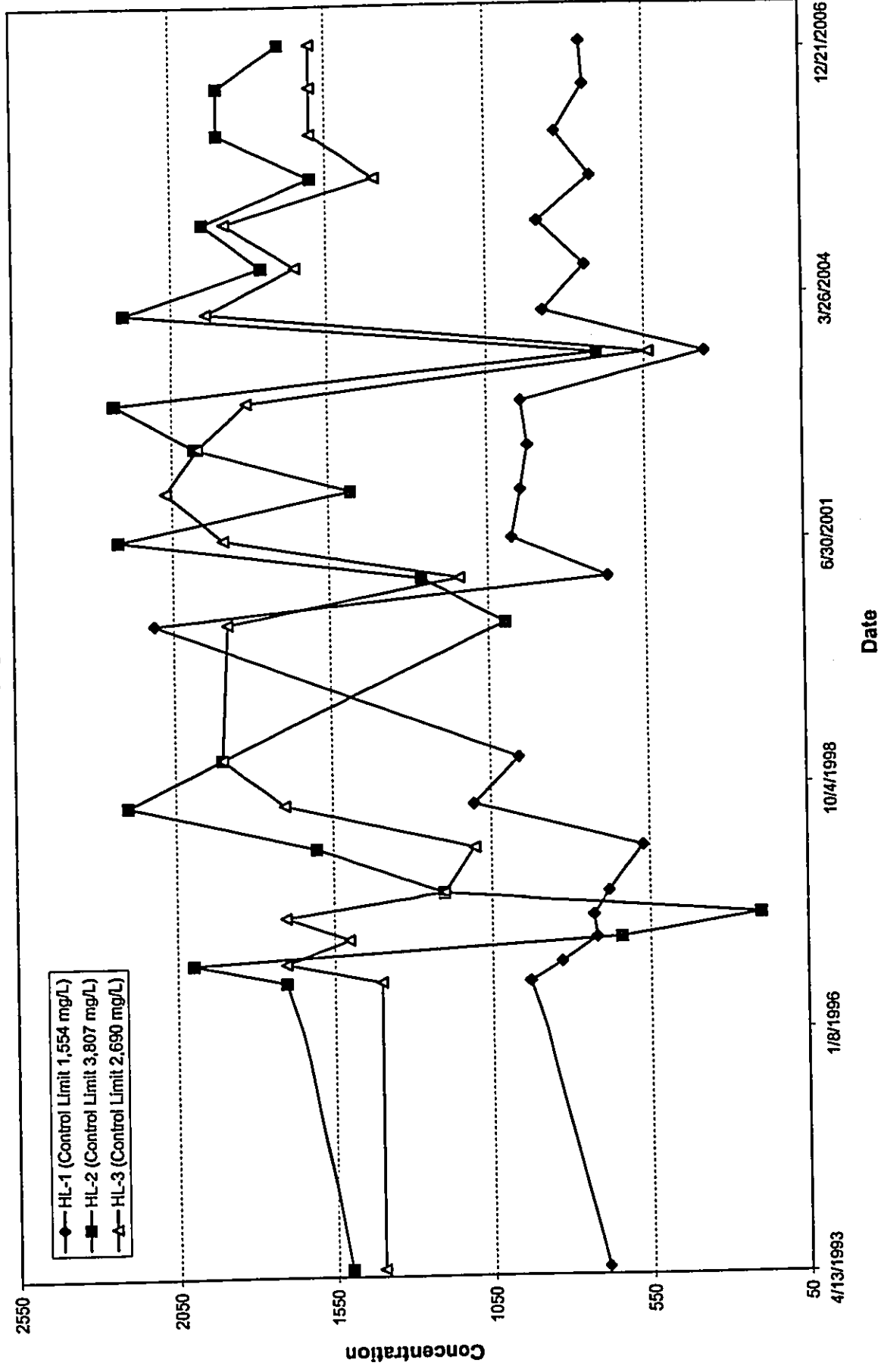


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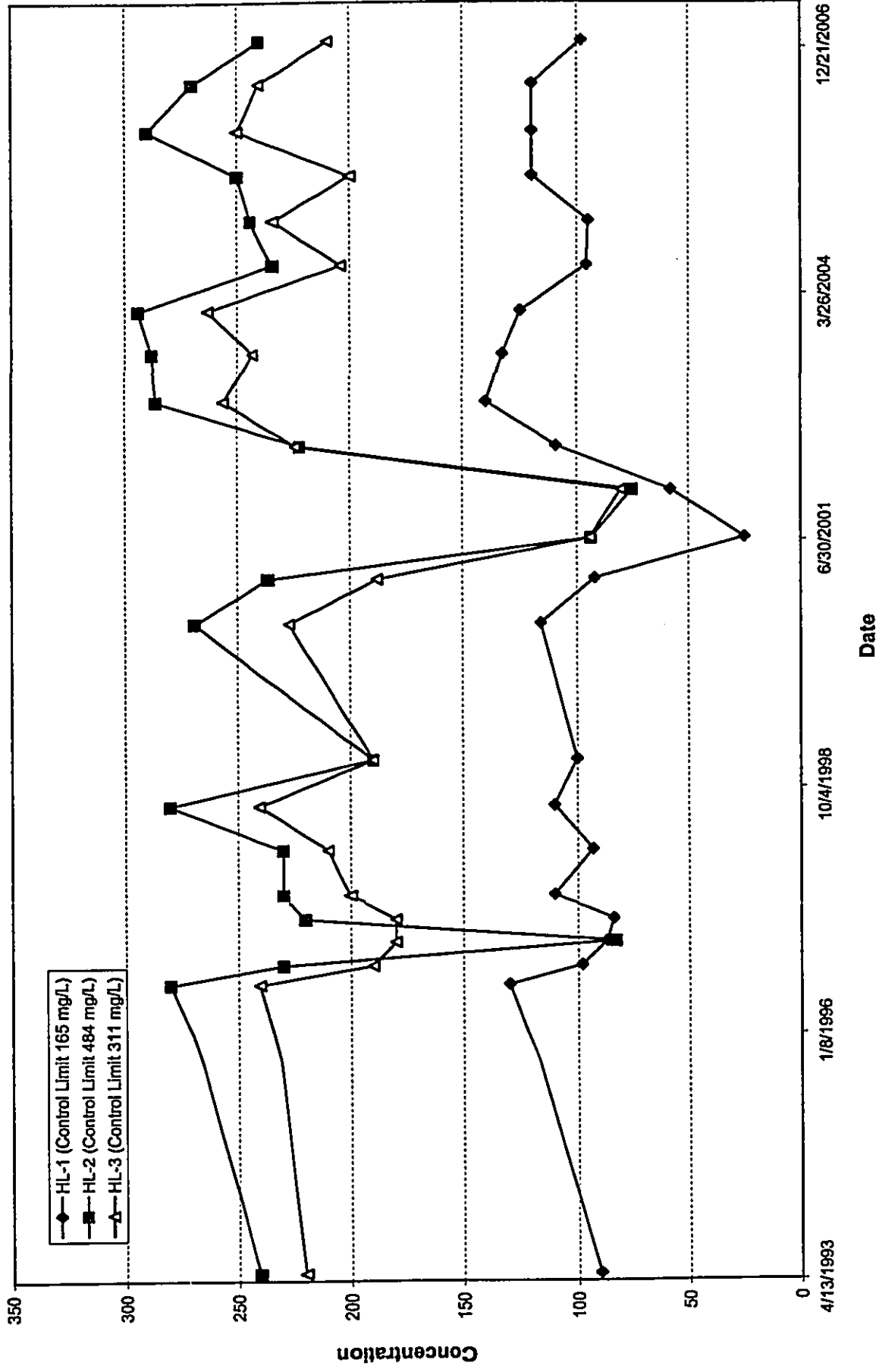
C-8

(07HON-018.xls:26536733.00003)

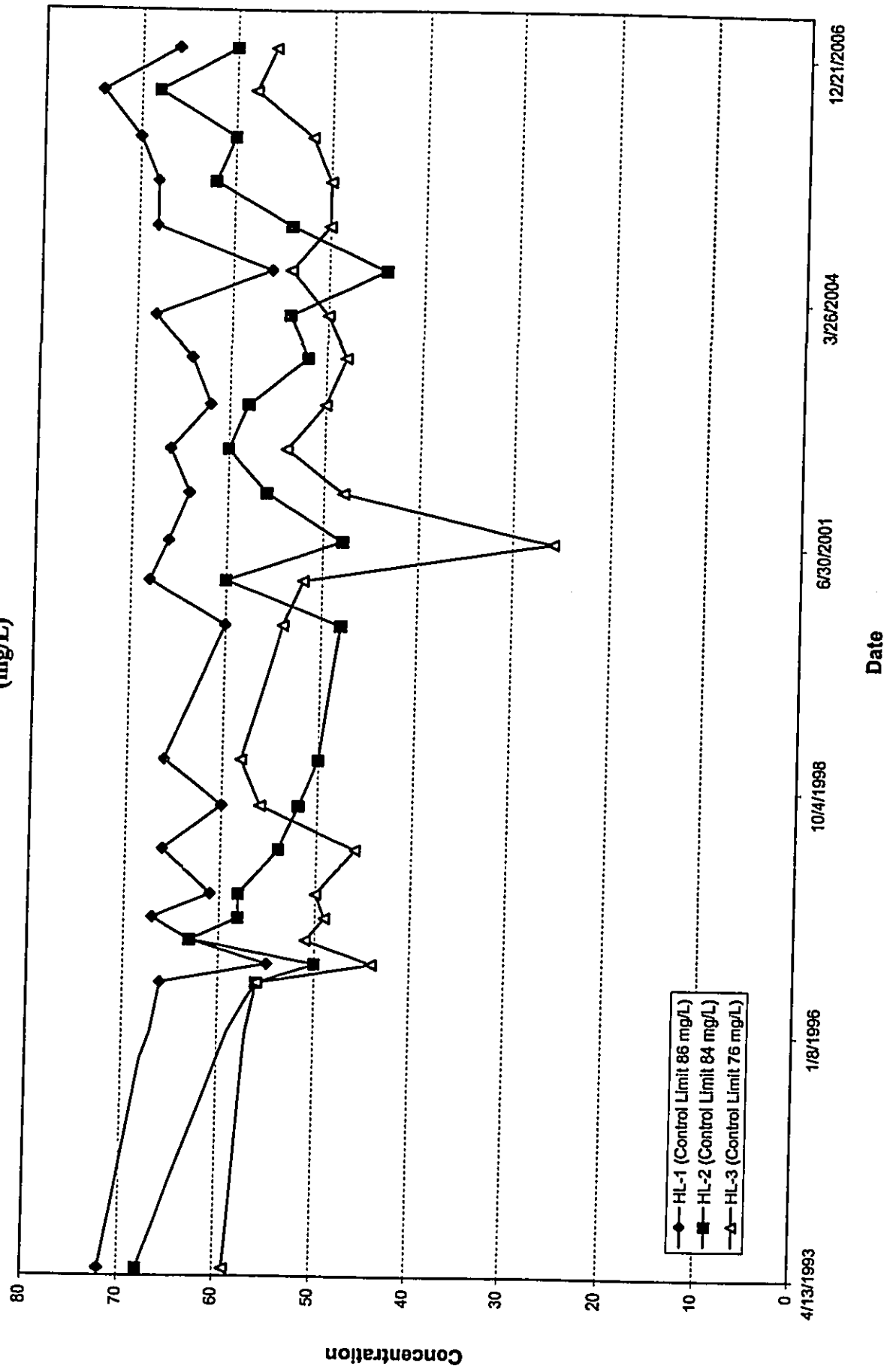
HANA LANDELL CHLORIDE CONCENTRATIONS (mg/L)



HANA LANDFILL SULFATE CONCENTRATIONS (mg/L)



HANA LANDELL ALKALINITY (mg/L)

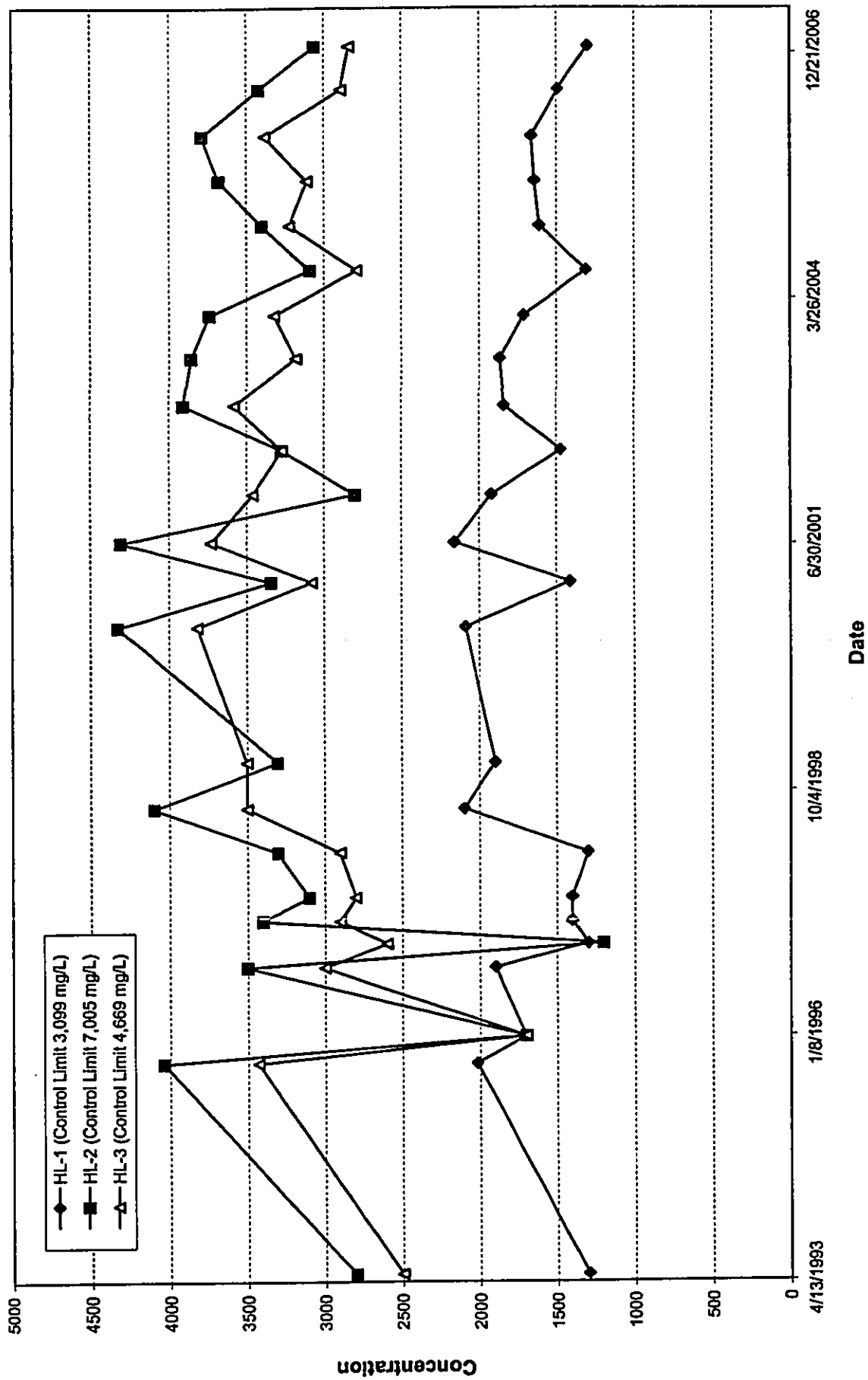


URS

C-11

(07HON-018.xls:26536733.00003)

HANA LANDFILL TOTAL DISSOLVED SOLIDS (mg/L)

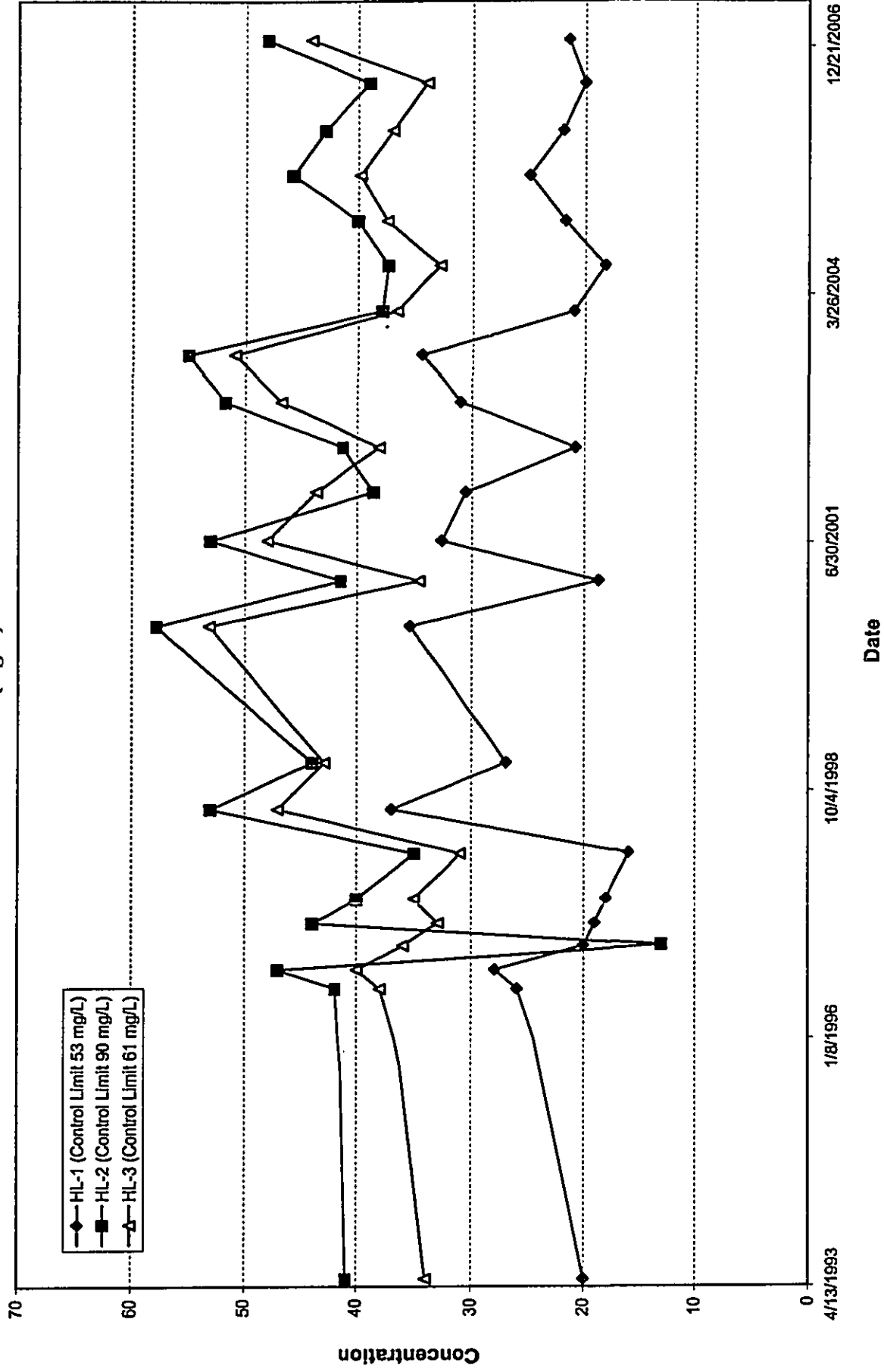


URS

C-12

(07HON-018.xls:26536733.00003)

HANA LANDFILL CALCIUM CONCENTRATIONS (mg/L)

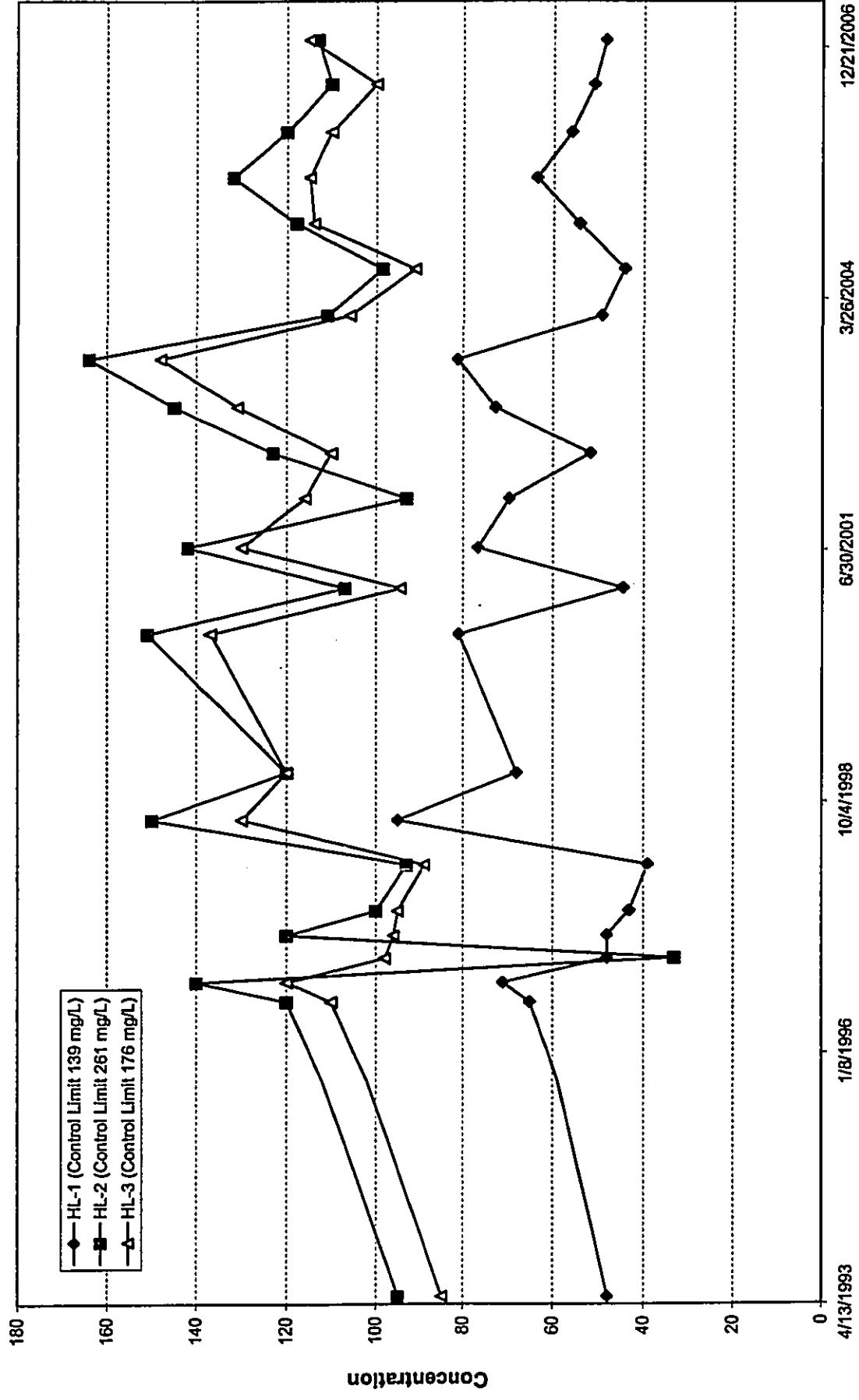


URS

C-13

(07HON-018.xls:26536733.00003)

HANA LANDFILL MAGNESIUM CONCENTRATIONS (mg/L)

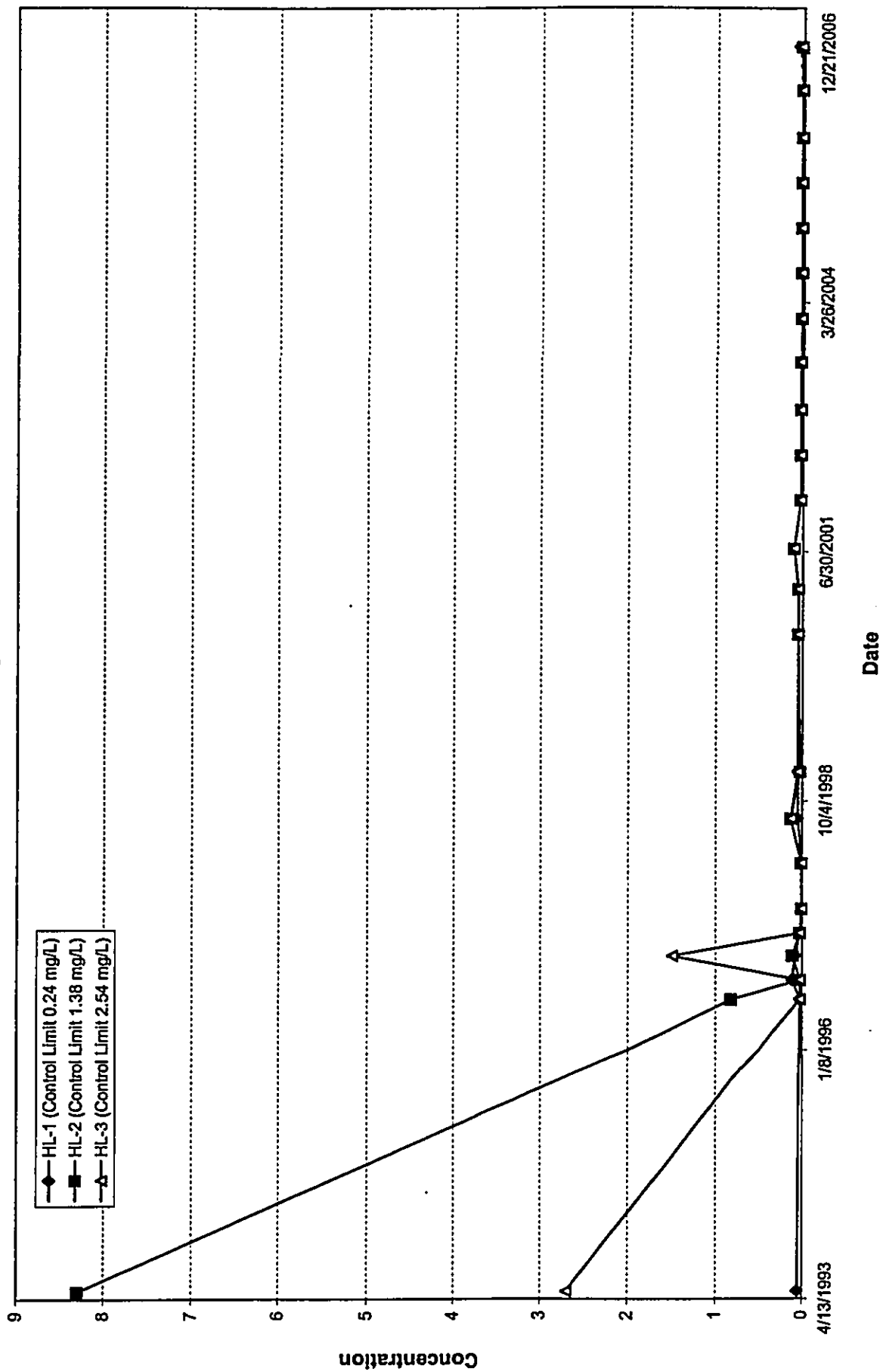


URS

C-14

(07HON-018.xls:26536733.00003)

HANA LANDFILL IRON CONCENTRATIONS (mg/L)

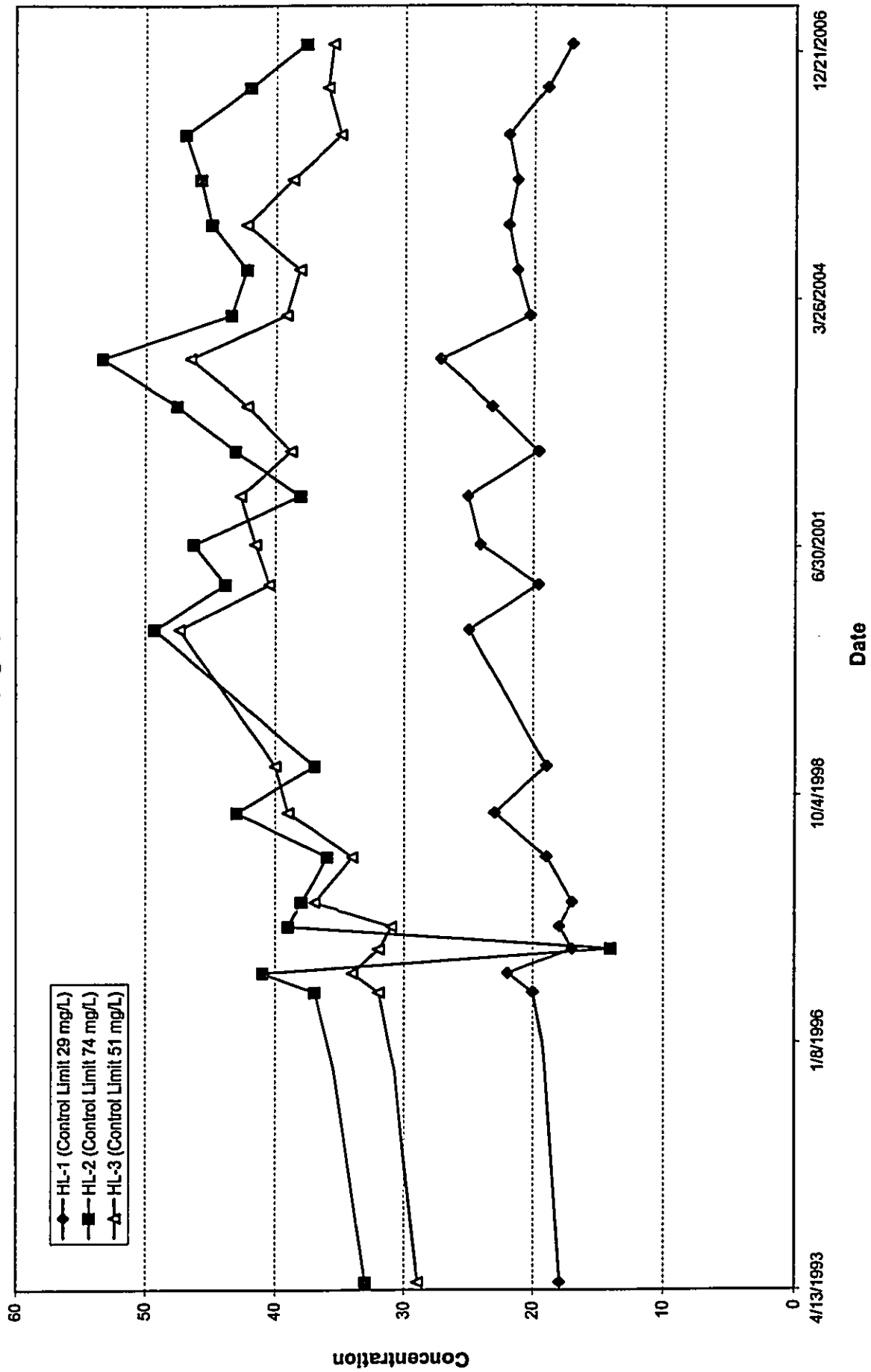


URS

C-15

(07HON-018.xls:26536733.00003)

HANA LANDFILL POTASSIUM CONCENTRATIONS (mg/L)

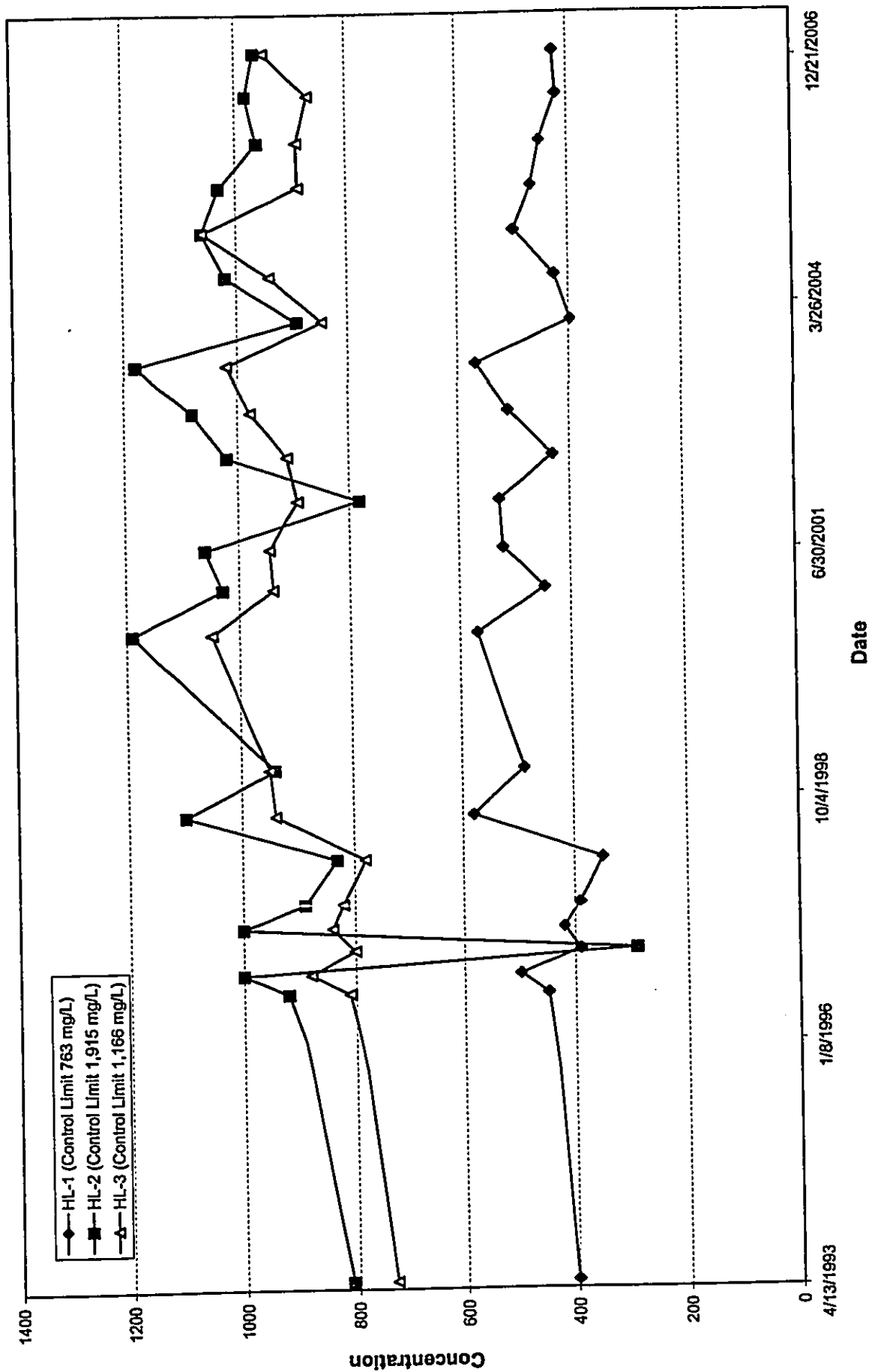


URS

C-16

(07HON-018.xls:26536733.00003)

HANA LANDELL SODIUM CONCENTRATIONS (mg/L)

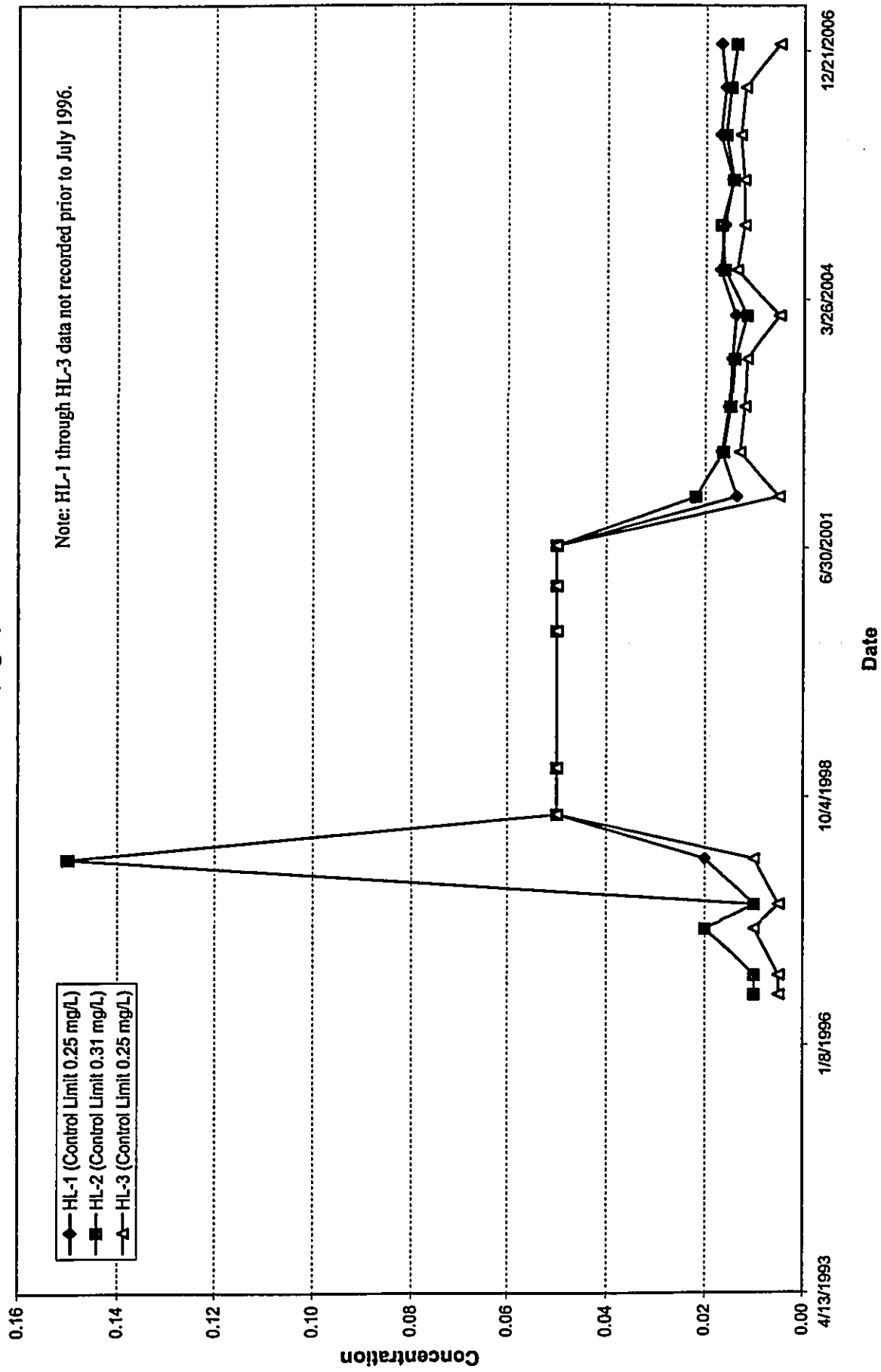


URS

C-17

(07HON-018.xls:26536733.00003)

HANA LANDELL VANADIUM CONCENTRATIONS (mg/L)

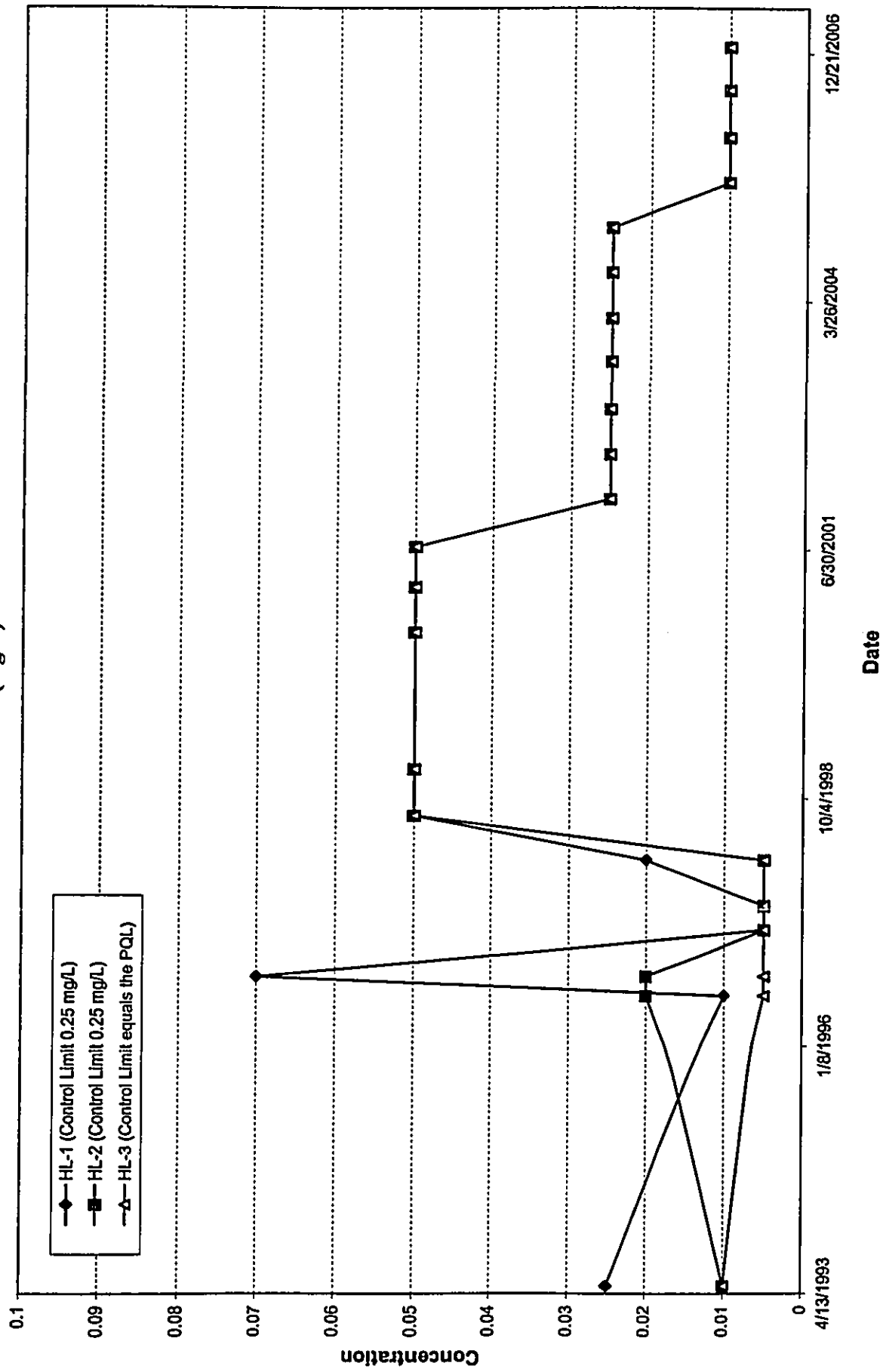


URS

C-18

(07HON-018.xls:26536733.00003)

HANA LANDFILL ZINC CONCENTRATIONS (mg/L)



URS

C-19

(07HON-018.xls:26536733.000003)

APPENDIX E.

State of Hawai`i, Department of Health Notice and Finding of Violation

STATE OF HAWAII
DEPARTMENT OF HEALTH
NOTICE AND FINDING OF VIOLATION

MAR 12 2007

TO: County of Maui 200 South High Street Wailuku, Hawaii 96793-2155 Attn: Mr. Milton Arakawa Director Department of Public Works, Respondent.	NFV&O No. 2006-CW-EO-15 <i>Please write this NF&VO number on all correspondence</i> Re: Violations of the Issued National Pollutant Discharge Elimination System Permit Property/Facility: Hana Sanitary Landfill Waikalua Road Hana, Hawaii 96713
--	---

Under Hawaii Revised Statutes ("HRS"), Chapters 91 and 342D, and Hawaii Administrative Rules ("HAR"), Chapter 11-55, the Department of Health ("DOH") issues this Notice and Finding of Violation and Order ("NFV&O"). Based on a Compliance Evaluation Inspection conducted on May 18, 2006, and the report attached as Exhibit A, the DOH finds these violations. This case deals only with violations alleged below, and DOH may bring other cases for other violations. This case does not limit cases by any other public agency or private party.

Statutes/Rules	Nature of the Violation
HRS, §342D-50(d) HAR, §11-55-03 HAR, §11-55, Appendix B HAR, §11-54-04	On May 18, 2006, the County of Maui, Department of Public Works, violated the issued Notice of General Permit Coverage ("NGPC"), File No. HI R50A624 by failing to implement Best Management Practices such as adequate containment for used oil, storm water detention basins, and run-on diversion swales detailed in submittals for the Hana Sanitary Landfill. Further, the County of Maui, Department of Public Works failed to disclose the scrap vehicle processing activities conducted at the Hana Sanitary Landfill in the Notice of Intent submitted to the DOH, Clean Water Branch. Since 1999, the County of Maui, Department of Public Works, has failed to conduct storm water sampling or submit annual Discharge Monitoring Reports ("DMRs") as required by the issued NGPC.

The facts of this case and the law justify the following order.

ORDER

You are ordered to:

1. Submit to the DOH DMRs from 1999 to the present and detail what changes will be made to comply with the storm water sampling NGPC condition within 20 days after the receipt of this NFV&O.
2. Report in detail the steps to be taken to prevent polluted discharges from entering into State waters as well as the corrective actions made to comply with the facility's Storm Water Pollution Control Plan and NGPC within 20 days after the receipt of this NFV&O.
3. Report in detail the scrap vehicle processing operations conducted at the Hana Sanitary Landfill and update the Storm Water Pollution Control Plan to account for potential pollutants from the scrap vehicle processing operations within 20 days after the receipt of this NFV&O.
4. Pay an administrative penalty of \$12,700 for the violation. Within 20 days after the receipt of the NFV&O, send a certified check to: Clean Water Branch ("CWB"), DOH, 919 Ala Moana Boulevard, Room 301, Honolulu, Hawaii 96814. The check should be made payable to "State of Hawaii" and include the NFV&O reference number above.

The provisions of this Order and the Notice and Finding of Violation shall become final unless, within 20 days after receipt, you submit a written request for a hearing, along with a copy of the Order and Notice and Finding of Violation, to the Hearings Officer, c/o Director of Health, 1250 Punchbowl St., Third Floor, Honolulu, Hawaii 96813. Your written request for hearing, along with the Order and Notice and Finding of Violation, must be filed with the Hearings Office within the 20 day period. You may file the hearing request in person at the Director's office, during regular business hours, or may mail the same to the above address within the allotted time. Failure to timely file the hearing request and related documents may result in a denial of your hearing request.

If a hearing is properly requested, a pre-hearing conference will be set by the Hearings Officer and you will be notified of the date, time and place of the pre-hearing conference.

The hearing will be conducted in accordance with Chapter 91 of the Hawaii Revised Statutes and Title 11, Chapter 1 of the Hawaii Administrative Rules. If you have special needs due to a disability and these needs will aid you in participating in the hearing or pre-hearing conference, please contact the Hearings Officer at (808) 586-4409 (voice) or through the Telecommunications Relay Service (711), at least ten (10) working days before the hearing or pre-hearing conference.

At the hearing, the parties may present relevant evidence and argument on the issues raised by this case. The parties may also examine and cross-examine witnesses and present exhibits.

Parties may be represented by legal counsel at their own expense. An individual may appear on his/her own behalf, or a member of a partnership may represent the partnership, or an officer or authorized employee of a corporation, or trust, or association may represent the corporation, trust or association.

After such hearing, the Order shall be affirmed, modified or rescinded by the Director or Hearings Officer.

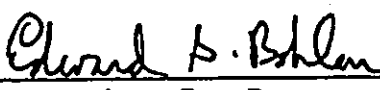
The written request for a hearing, along with the related documents and pleadings in this case shall be directed to:

Hearings Officer
c/o Director of Health
Department of Health
1250 Punchbowl Street, Third Floor
Honolulu, HI 96813

All other inquiries regarding this matter shall be directed to: Mr. Michael Tsuji, Supervisor of the Enforcement Section, CWB, at (808) 586-4309.

If you have special needs due to a disability that will aid you in participating in the hearing or pre-hearing conference, please contact the Hearings Officer at (808) 586-4409 (voice) or through the Telecommunications Relay Service (711), at least ten (10) working days before the hearing or pre-hearing conference date.

 Date: 1/31/07
LAURENCE K. LAU
Deputy Director for
Environmental Health


Approved as to Form By:
Mr. Edward G. Bohlen
Deputy Attorney General

COPY

Investigation Report Department of Health Clean Water Branch

ID #: PA0214A

Date of investigation: 5/18/2006

Page 1 of 2

Permit/File/WQC No: R50A624

Island: Maui

Facility: County of Maui

Complaint/Background Description:

On May 18, 2006, the Department of Health ("DOH"), Clean Water Branch ("CWB"), conducted a Compliance Evaluation Inspection ("CEI") of the Hana Sanitary Landfill ("Landfill"), located on Waikalua Road, Hana, Hawaii. Matthew Kurano and Michael Tsuji of the DOH conducted the inspection. The inspection was prompted by the Landfill's failure to submit annual Discharge Monitoring Reports ("DMRs") as well as non-compliance issues found at the Landfill during a 2001 CEI. Roxanna Smith, the Landfill's operator, was present at the time of inspection.

Permit History

The Hana Sanitary Landfill was issued a Notice of General Permit Coverage ("NGPC") for storm water runoff associated with industrial related activities, File No. R50A624. The Landfill was issued the NGPC on May 11, 2005. The NGPC expires on November 6, 2007. The Landfill is permitted to discharge untreated storm water into Kawaipapa Gulch.

Findings Description:

The weather was overcast throughout the inspection. The following findings were either observed or noted before, during or after the inspection:

- 1) The Landfill is located on Waikalua Road in Hana, Maui. The Landfill is owned and operated by the County of Maui. The Landfill accepts municipal solid waste ("MSW"), construction and demolition ("C&D") waste, green waste, used oil, and processed scrap vehicles. The Landfill is separated into two (2) sides. The side that is East of Waikalua Road (Photograph 1) is where scrap vehicles, used motor oil, and green waste is stockpiled. The side that is West of Waikalua Road is where the C&D waste and MSW is buried. There is currently only one (1) operator employed at the Landfill. An attendant position has not been filled. When needed, County of Maui Highway Division employees operate the Landfill.
- 2) On the East side of the Landfill, a large stockpile of scrap vehicles (Photograph 2) and used propane tanks were observed. The stockpile of scrap vehicles (Photograph 3) extended from Waikalua Road North and East towards the limits of the Landfill's grading. A strong odor of petroleum was detected in the area during the inspection and significant amounts of oil staining on the ground were observed. No overhead cover or other Best Management Practices ("BMPs") were observed for the scrap vehicle stockpiles. It was unclear at the time of inspection whether all of the vehicles had been adequately processed for salvaging.
- 3) East of where the scrap vehicles were observed, two (2) stockpiles of used lead acid batteries (Photographs 4 and 5) were observed. The lead acid batteries were placed in direct contact with the ground, on wooden pallets, or in an aged shipping container. The Landfill representatives stated that in the months prior to the inspection, there had been more batteries than what was observed. Many of the used lead acid battery cases did not appear to be intact and small amounts of acid were observed spilling from the battery cases onto the ground.
- 4) Near the scrap vehicle stockpile, an excavator was observed. Landfill representatives stated that the excavator was used for the crushing and stacking of scrap vehicles. The excavator was leaking what appeared to be oil (Photograph 6) at the time of inspection. Landfill representatives stated that the excavator was the property of the contractor hired to remove the scrap vehicles from the Landfill, and that the contractor was only at the Landfill approximately two (2) to four (4) times a month. It was unclear how long the excavator was leaking the oil-like fluid onto the ground at the time of inspection.
- 5) On the East side of the Landfill, the used oil storage area (Photograph 7) was observed. The used oil

Exhibit A

Investigation Report Department of Health Clean Water Branch

ID #: PA02144

Date of investigation 5/18/2006

Page 2 of 2

storage area consists of a three-walled shelter where 55-gallon drums of used motor oil is stored. The 55-gallon drums of used motor oil were stored on spill pallets at the time of inspection. However, closer inspection of the spill pallets found that the spill reservoirs in the spill pallets (Photograph 8) were full of what appeared to be oil. Landfill representatives stated that the spill pallets were full of a mixture of oil and storm water since the shelter did not adequately protect the 55-gallon drums from rain events.

6)The C&D and MSW area (Photographs 9 and 10) is located on the West side of Waikalua Road. The open face of the Landfill (Photograph 11) was approximately twenty (20) feet across and six (6) feet tall. Landfill representatives stated that there is not enough cover material to cover the open face of the Landfill at the end of the day approximately fifty (50) percent of the time. However, the housekeeping at the C&D and MSW area of the Landfill appeared to be good.

7)The area West of the Landfill (Photograph 12) was flat and well grassed at the time of inspection. Kawaipapa Gulch, on the West side of the Landfill, was well vegetated and there did not appear to be any litter in its vicinity. However, near the edge of Kawaipapa Gulch, a stockpile of asphalt (Photograph 13) was observed. Landfill representatives stated that the asphalt stockpile was from the County of Maui Highways division. The Landfill representatives stated that it was common practice for the Highways division to stockpile material at the Landfill. No asphalt stockpile BMPs were observed in the area.

8)The Landfill has not submitted a DMR since 1999. No sampling kit was available on site and Landfill representatives had not received any storm water sampling or pollution prevention training. The Landfill did maintain a copy of the Notice of Intent, NGPC, and Storm Water Pollution Control Plan at the Landfill's office.

In conclusion, the Hana Sanitary Landfill has several areas of non-compliance with the issued NGPC. The Landfill maintains copies of the required documents onsite, but no storm water sampling has been conducted as required by the issued NGPC. Further, the scrap vehicles, used motor oil, and lead acid batteries stored at the Landfill are significant sources of pollution. The findings during the inspection were nearly identical to the findings during the CWB 2001 inspection of the Landfill. No significant improvements have been made to the Landfill since 2001.

The DOH CWB is pursuing enforcement actions in the form of a Notice and Finding of Violation and Order

Name: Matthew Kurani

Signature: Matthew Kurani

Title: EH

Date: 6/7/06

Name: Michael Tsang

Signature: Michael Tsang

Title: Enforcement Section Supervisor

Date: 6/7/06



Photograph # 1

Date. May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikalua Road, Hana, Hawaii 96713

Description View of the entrance to the non-municipal solid waste area of the Landfill. The non-municipal solid waste area is on the East side of Waikalua Road



Photograph # 2

Date. May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikalua Road, Hana, Hawaii 96713

Description View of the stockpiled scrap vehicles (Red Arrows) Used propane tanks were also observed (Blue Arrow) in the area



Photograph # 3

Date: May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikaloe Road, Hana, Hawaii 96713

Description Closer view of the vehicle scrap stockpiles. The vehicle scrap stockpiles are in contact with storm water and may not have been adequately processed prior to stockpiling.



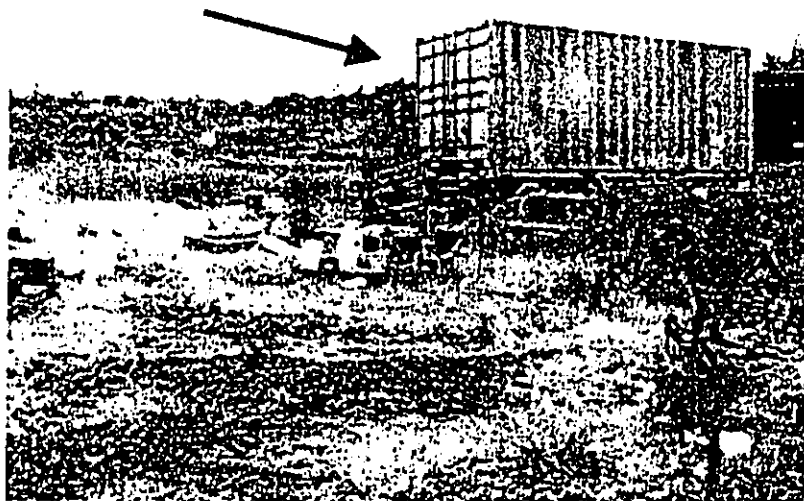
Photograph # 4

Date May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikaloe Road, Hana, Hawaii 96713

Description View of one (1) of two (2) used lead acid battery stockpile observed. The batteries were placed either directly on the ground or on wooden pallets at the time of inspection.



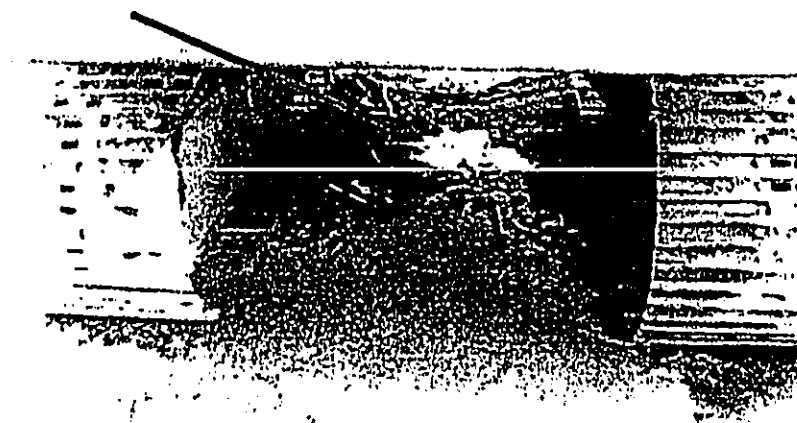
Photograph # 5

Date: May 18, 2006

Observers: Matthew Kurano and Michael Tsuji

Location: Hana Sanitary Landfill, Waikalooa Road, Hana, Hawaii 96713

Description: View of a second stockpile of lead acid batteries. Landfill representatives stated that the container (Red Arrow) was full of used lead acid batteries as well.



Photograph # 6

Date: May 18, 2006

Observers: Matthew Kurano and Michael Tsuji

Location: Hana Sanitary Landfill, Waikalooa Road, Hana, Hawaii 96713

Description: View of an excavator that was leaking oil (Red Arrow) at the time of inspection. The oil was flowing away from the excavator at the time of inspection.



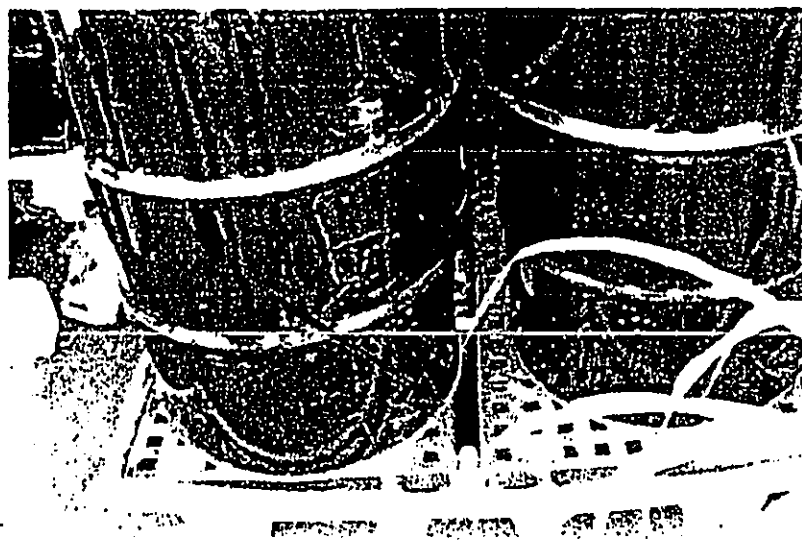
Photograph # 7

Date: May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikalua Road, Hana, Hawaii 96713

Description View of the used oil storage area. The shelter did not prevent storm water from coming into contact with the used oil storage drums.



Photograph # 8

Date May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikalua Road, Hana, Hawaii 96713

Description View of the spill pallets in the used oil storage area. The spill pallets were full of oil (Red Arrow) at the time of inspection. Oil residuals were also observed in the area around the spill pallets.



Photograph # 9

Date May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikaloa Road, Hana, Hawaii 96713

Description View of the entrance to the municipal solid waste area of the Landfill. The area was well vegetated at the time of inspection



Photograph # 10

Date May 18, 2006

Observers Matthew Kurano and Michael Tsuji

Location Hana Sanitary Landfill, Waikaloa Road, Hana, Hawaii 96713

Description View of the municipal solid waste area of the Landfill. The Landfill has one (1) bulldozer (Red Arrow) to conduct compacting and covering operations



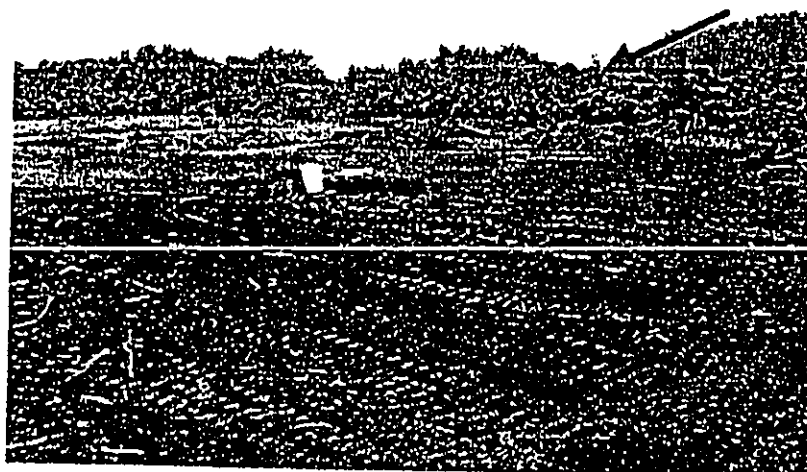
Photograph # 11

Date: May 18, 2006

Observers: Matthew Kurano and Michael Tsuji

Location: Hana Sanitary Landfill, Waikalua Road, Hana, Hawaii 96713

Description: View of the open face of the Landfill C&D debris as well as MSW is disposed of in this part of the Landfill



Photograph # 12

Date: May 18, 2006

Observers: Matthew Kurano and Michael Tsuji

Location: Hana Sanitary Landfill, Waikalua Road, Hana, Hawaii 96713

Description: View of the C&D and MSW area of the Landfill facing East Kawaipapa Gulch (Red Arrow) is on the East side of the Landfill



Photograph # 13

Date: May 18, 2006

Observers: Matthew Kurano and Michael Tsuji

Location: Hana Sanitary Landfill, Waikalua Road, Hana, Hawaii 96713

Description: View of an asphalt stockpile that was observed near Kawaipapa Gulch at the Landfill. No BLV for the stockpile were observed at the time of inspection.

I certify that the thirteen (13) attached photos described above were taken by the undersigned and are a true, accurate, and reflects what was observed on May 18, 2006 at the Hana Sanitary Landfill, Waikalooa Road, Hana, Hawaii.

Matthew R. Kurano
Matthew R. Kurano

6/7/06
Date

IN THE DEPARTMENT OF HEALTH
STATE OF HAWAII

DEPARTMENT OF HEALTH,
STATE OF HAWAII,

Complainant,

vs.

Department of Public Works,
County of Maui,

Respondent.

) DOCKET NO. 2006-CW-EO-15

) CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I served the documents listed below by mailing, via certified mail, return receipt requested # 7005 1820 0005 8411 2097, on FEB 02 2007, a copy of those documents to the person named below at the address indicated.

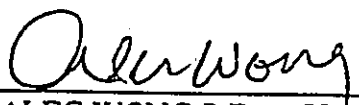
DOCUMENTS:

1. Notice and Finding of Violation;
2. Order; and
3. Exhibit A.

PERSON SERVED AND ADDRESS:

Mr. Milton Arakawa
Director
Department of Public Works
County of Maui
200 South High Street
Wailuku, Hawaii 96793-2155

DATED: Honolulu, Hawaii, FEB 02 2007


ALEC WONG P.E., ACTING CHIEF
Clean Water Branch

MK:cu

c: Mr. Edward G. Bohlen, Deputy Attorney General, Department of the Attorney General (w/o encls.)
Water Division (WTR-7), CWA Compliance Office, EPA, Region 9 (w/enclosures)

Mich:

Re: Corrective Actions in response to Hana LF NPDES permit violations in 2006

- 1) The Department has requested 1.5M in next year's budget for scrap metal removal and clean-up. The previous contractor was unable to make progress with the stockpile except for removal of batteries and propane tanks for recycling.
- 2) The Solid Waste Division is currently implementing a plan for the collection of scrap metal and related materials as follows:
 - A) A cinder pad has been placed on the mauka side of the landfill parcel for three 37 cubic yard roll-offs and two 20-foot shipping containers with sufficient turn-around room for haul trucks and easy access by customers.
 - B) One 20-foot shipping container has been placed on the pad to hold two spill pallets, each with four 55-gallon drums for used motor oil collection.
 - C) Haztech has been hired to pump the drums as well as pump and clean the spill pallets prior to transferring them to the new shipping container.
 - D) One 20-foot shipping container has been placed on the pad for batteries.
 - E) Two 37 cubic yard roll-offs have been procured and will be hauled to Hana for the collection of miscellaneous scrap metal with propane tanks and one for the collection of appliances, both freon and nonfreon.
 - F) Two newly purchased 37 cubic yard roll-offs, one for appliances and one as a swap container are yet to be delivered on-island.
 - G) Eighteen toters, either 64-gallon or 96-gallon, for glass collection will be transported by Maui Recycling Service to Maui Disposal's glass pulverizer. A 20-foot shipping container will be ordered so that the toters are covered.
 - H) Banning derelict vehicles from the landfill, after a community meeting to be held in Hana, so that these materials are no longer stockpiled, eliminating the problem of hauling them out on Hana Highway with its narrow lanes, numerous bridges with limited loads, heavy traffic, winding route with blind curves, steep grade changes with some sheer drop-offs.
- 3) Proceeding with the SMA permit application and other land use permits for the buffer area around the landfill parcel will allow the construction of storm water improvements including a retention pond proposed in this additional area.

APPENDIX F.

**Botanical and Fauna Survey,
September 2006**

BOTANICAL AND FAUNA SURVEYS
for the
HANA LANDFILL EXPANSION PROJECT
KAWAIPAPA, HĀNA, MAUI

by
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Prepared for:
County of Maui
Dept. of Public Works and Environmental Management,
Solid Waste Division

**BOTANICAL AND FAUNA SURVEY
HANA LANDFILL EXPANSION PROJECT
KAWAIPAPA, HĀNA, MAUI**

INTRODUCTION

The Hāna Landfill Expansion Project lies on 34.446 acres of land north of Hāna Bay. The project area is surrounded on all sides by unencumbered State land on an old lava flow about 200 yards inland from the ocean. The land area is made up of two parcels: TMK (2) 1-3-06:12 (por.) 29.0 acres and TMK (2) 1-3-06:07 (por.) 5.446 acres. This report is an assessment of the biological resources on the property completed in fulfillment of government environmental requirements.

SITE DESCRIPTION

The entire project area is an 'a'ā lava flow less than 1,000 years in age but nearly completely vegetated with lowland, windward, non-native forest except for cleared portions around the existing landfill. Soils are characterized as rLW – 'a'ā lava flow throughout (Foote et al, 1972). Rainfall averages 70 to 75 inches per year with the bulk falling between November and April (Armstrong, 1983). Elevations range from 30 to 50 feet above sea level.

BIOLOGICAL HISTORY

This lava flow was barren 'a'ā a few hundred years ago. Being in a higher rainfall windward environment, the area became vegetated rather quickly. The vegetation would have been initially dominated by hardy windward coastal species such as hala (*Pandanus tectorius*) and naupaka kahakai (*Scaevola taccada*).

The area has never been extensively used for agriculture or grazing due to the rough lava landscape so changes have been gradual. Non-native plant species have invaded this landscape and now form the major part of the vegetation. Native plant species are now reduced in number and of scattered occurrence.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Hāna Landfill Expansion Project which was conducted in November, 2006.

The objectives of the survey were to:

1. Document what plant, bird and mammal species occur on the property or may likely occur in the existing habitat.
2. Document the status and abundance of each species.
3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.
4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.
5. Note which aspects of the proposed development pose significant concerns for plants or for wildlife and recommend measures that would mitigate or avoid these problems.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used following a route to ensure complete coverage of the area. Areas most likely to harbor native or rare plants such as gulches or rocky outcroppings were more intensively examined. Notes were made on plant species, distribution and abundance as well as terrain and substrate.

DESCRIPTION OF THE VEGETATION

Although the terrain on this property is fairly uniform the area can be placed into three general categories: forest, landscape, and landfill, each of which has different types of vegetation.

Forest - The undeveloped portions of this property are a disturbed, wet, windward, lowland forest dominated by non-native plant species. Common plants include common ironwood (*Casuarina equisetifolia*), gunpowder tree (*Trema orientalis*), African tulip-tree (*Spathodea campanulata*) and Star flower (*Hoya australis*). A few native species are scattered within this forest: hala, naupaka kahakai, kauna'oa pehu (*Cassytha filiformis*) and kakalaioa (*Caesalpinia bonduc*).

Landscape - The Hāna Landfill has received awards for its attractive landscape. Ornamental plants have been placed around the entrance and the load talley office and along the road. Thirty nine ornamentals were observed and recorded. Among these were the indigenous napuaka kahakai and five Polynesian plants: niu (*Cocos nucifera*), noni (*Morinda citrifolia*), ki (*Cordyline fruticosa*), kukui (*Aleurites moluccana*) and 'ōhi'a 'ai (*Syzygium malaccense*).

Landfill - This is the cleared interior part of the landfill that is largely barren ground and covered trash areas. The covered areas and the perimeters have an abundance of common weeds that have taken over the recently disturbed ground. Most prevalent are California grass (*Brachiaria mutica*), Natal redtop (*Melinis repens*), dog tail (*Buddleia asiatica*), niruri (*Phyllanthus debilis*), partridge pea (*Chamaecrista nictitans*) smooth rattlepod (*Crotalaria pallida*) and Florida beggarweed (*Desmodium tortuosum*). The only native plant found here was the common 'uhaloa (*Waltheria indica*).

A total of 141 plant species were recorded during the survey. Of these none were endemic only to Hawaii, while 10 species were indigenous to Hawaii and other Pacific Islands. These species were: 'ōkupukupu (*Nephrolepis cordifolia*), (*Cyperus polystachyos*) no common name, kakalaioa, kauna'oa pehu, moa (*Psilotum nudum*), hala, kou (*Cordia subcordata*), koali awahia (*Ipomoea indica*) naupaka kahakai and 'uhaloa. Five species were of Polynesian origin and introduction.

DISCUSSION AND RECOMMENDATIONS

The vegetation throughout the project area is comprised mainly of non-native species with a few common native species scattered about. No Federally listed Threatened or Endangered species (USFWS, 1999) were found on the property nor were any found that are candidates for such status. No special habitats were found here either. No wetlands occur on the property on this elevated lava substrate.

Because of the above existing conditions there is little of botanical concern with regard to the property and the proposed landfill expansion is not expected to have a significant negative impact on the botanical resources in this part of Maui.

Of special concern in the Hāna area during the past decade has been the spread of miconia (*Miconia calvescens*) into the wet native forests. This highly invasive species has been the focus of an intensive eradication program since 1993 that is still ongoing. No miconia plants were found on or adjacent to the project area, but the cinder used in the landfill comes from a cinder cone in the mauka forests where miconia has previously been found. There is a concern that seed could be transported to the landfill and spread in this area. Since there are no known miconia plants presently in the immediate vicinity of the landfill a practical recommendation would be to periodically monitor both the landfill property as well as the cinder pit site for the presence of miconia plants and eradicate any individuals found while they are still immature.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within four groups: Ferns, Gymnosperms, Monocots and Dicots. Taxonomy and nomenclature of the Ferns are in accordance with Palmer (2005). Taxonomy and nomenclature of the Gymnosperms and of the flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1999) and Staples & Herbst (2005).

For each species, the following information is provided:

1. Scientific name with author citation
2. Common English or Hawaiian name.
3. Bio-geographical status. The following symbols are used:
 - endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.
 - indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
 - non-native = all those plants brought to the islands intentionally or accidentally after western contact.
4. Abundance of each species within the project area:
 - abundant = forming a major part of the vegetation within the project area.
 - common = widely scattered throughout the area or locally abundant within a portion of it.
 - uncommon = scattered sparsely throughout the area or occurring in a few small patches.
 - rare = only a few isolated individuals within the project area.

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
FERNS			
NEPHROLEPIDACEAE (Sword Fern Family)			
<i>Nephrolepis cordifolia</i> (L.) C. Presl	'okupukupu	indigenous	rare
<i>Nephrolepis multiflora</i> (Roxb.) Jarrett & Morton	sword fern	non-native	uncommon
POLYPODIACEAE (Polypody Family)			
<i>Phymatosorus grossus</i> (Langsd. & Fisch.) Brownlie	laua'e	non-native	rare
PSILOTACEAE (Whisk Fern Family)			
<i>Psilotum nudum</i> (L.) P. Beauv.	moa	indigenous	rare
GYMNOSPERMS			
CYCADACEAE (Cycad Family)			
<i>Cycas revoluta</i> Thunberg	Okinawan cycad	non-native	rare
MONOCOTS			
AGAVACEAE (Agave Family)			
<i>Cordyline fruticosa</i> (L.) A. Chev.	ki	Polynesian	uncommon
<i>Dracaena marginata</i> Lamarck	'tricolor'	non-native	rare
<i>Sansevieria cylindrica</i> Bojer	sansevieria	non-native	rare
ARACEAE (Aroid Family)			
<i>Epipremnum pinnatum</i> (L.) Engler	taro vine	non-native	rare
<i>Philodendron pinnatifidum</i> (Jacq.) Schott	philodendron	non-native	rare
ARECACEAE (Palm Family)			
<i>Caryota urens</i> L.	wine palm	non-native	rare
<i>Chamaedorea seifrizii</i> Burret	bamboo palm	non-native	rare
<i>Cocos nucifera</i> L.	niu	Polynesian	uncommon

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<i>Dyopsis lutescens</i> (H. Wend.) Beenjie & Dransfield	golden-fruited palm	non-native	rare
COMMELINACEAE (Dayflower Family)			
<i>Commelina benghalensis</i> L.	hairy honohono	non-native	rare
<i>Commelina diffusa</i> N.L. Burm.	honohono	non-native	uncommon
<i>Tradescantia spathacea</i> Sw.	oyster plant	non-native	rare
CYPERACEAE (Sedge Family)			
<i>Cyperus polystachyos</i> Rottb.	_____	indigenous	rare
<i>Cyperus rotundus</i> L.	nut sedge	non-native	uncommon
MUSACEAE (Banana Family)			
<i>Musa acuminata x balbisiana</i> Colla	banana	non-native	rare
PANDANACEAE (Screwpine Family)			
<i>Pandanus tectorius</i> S. Parkinson ex Z	hala	indigenous	uncommon
POACEAE (Grass Family)			
<i>Andropogon virginicus</i> L.	broomsedge	non-native	rare
<i>Axonopus compressus</i> (Sw.) P. Beauv.	carpetgrass	non-native	rare
<i>Brachiaria mutica</i> (Forssk.) Stapf	California grass	non-native	common
<i>Brachiaria subquadrifera</i> (Trin.) Hitch.	_____	non-native	rare
<i>Cenchrus ciliaris</i> L.	buffelgrass	non-native	rare
<i>Cenchrus echinatus</i> L.	common sandbur	non-native	uncommon
<i>Chloris barbata</i> (L.) Sw.	swollen fingergrass	non-native	uncommon
<i>Coix lacryma-jobi</i> L.	Job's tears	non-native	rare
<i>Cymbopogon citratus</i> (DC.) Stapf.	lemon grass	non-native	rare
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	non-native	uncommon
<i>Digitaria ciliaris</i> (Retz.) koeler	Henry's crabgrass	non-native	rare
<i>Digitaria eriantha</i> Steud.	pangola grass	non-native	uncommon

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<i>Digitaria insularis</i> (L.) Mex ex Ekman	sourgrass	non-native	rare
<i>Digitaria setigera</i> Roth	kukae pua'a	non-native	uncommon
<i>Digitaria violascens</i>	kukae pua'a uka	non-native	uncommon
<i>Eleusine indica</i> (L.) Gaertn.	wiregrass	non-native	uncommon
<i>Eragrostis amabilis</i> (L.) Wight & Arnott	Japanese lovegrass	non-native	rare
<i>Eragrostis pectinacea</i> (Michx.) Nees	Carolina lovegrass	non-native	uncommon
<i>Melinis minutiflora</i> P. Beauv.	molasses grass	non-native	uncommon
<i>Melinis repens</i> (Willd.) Zizka	Natal redtop	non-native	common
<i>Panicum maximum</i> Jacq.	Guinea grass	non-native	uncommon
<i>Paspalum conjugatum</i> Bergius	Hilo grass	non-native	rare
<i>Pennisetum purpureum</i> Schumach.	Napier grass	non-native	uncommon
<i>Phyllostachys nigra</i> (Lodd. ex Lindley) Munro	black bamboo	non-native	rare
<i>Sporobolus diander</i> (Retz.) P. Beauv.	Indian dropseed	non-native	rare
<i>Sporobolus indicus</i> (L.) R. Br.	West Indian dropseed	non-native	uncommon
STRELITZIACEAE (Bird-of-paradise Family)			
<i>Strelitzia nicolai</i> Regel & Kornicke	white bird-of-paradise	non-native	rare
<i>Strelitzia reginae</i> Dryander	bird-of-paradise	non-native	rare
DICOTS			
AMARANTHACEAE (Amaranth Family)			
<i>Amaranthus spinosus</i> L.	spiny amaranth	non-native	rare
ANACARDIACEAE (Mango Family)			
<i>Mangifera indica</i> L.	mango	non-native	rare
<i>Schinus terebinthifolius</i> Raddi	Christmas berry	non-native	rare
APOCYNACEAE (Dogbane Family)			
<i>Catharanthus roseus</i> (L.) G. Don	Madagascar periwinkle	non-native	rare

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<i>Plumeria rubra</i> L.	plumeria	non-native	rare
ARALIACEAE (Ginseng Family)			
<i>Polyscias guilfoylei</i> (W. Bull) L.H. Bailey	panax	non-native	rare
<i>Schefflera actinophylla</i> (Endl.) Harms	octopus tree	non-native	uncommon
ASCLEPIADACEAE (Milkweed Family)			
<i>Calotropis gigantea</i> (L.) W.T. Aiton	crownflower	non-native	rare
<i>Calotropis procera</i> (W.T. Aiton) W.T. Aiton	small crownflower	non-native	rare
<i>Hoya australis</i> J. Trail	star flower	non-native	common
ASTERACEAE (Sunflower Family)			
<i>Bidens pilosa</i> L.	Spanish needle	non-native	uncommon
<i>Emilia fosbergii</i> Nicolson	red pualele	non-native	rare
<i>Pluchea carolinensis</i> (Jacq.) G. Don	sourbush	non-native	uncommon
BIGNONIACEAE (Bignonia Family)			
<i>Spathodea campanulata</i> P. Beauv.	African tulip-tree	non-native	common
BORAGINACEAE (Borage Family)			
<i>Cordia subcordata</i> Lam.	kou	indigenous	rare
<i>Heliotropium procumbens</i> Mill.	-----	non-native	uncommon
BUDDLEIACEAE (Butterfly Bush Family)			
<i>Buddleia asiatica</i> Lour.	dog tail	non-native	common
CAPPARACEAE (Caper Family)			
<i>Cleome gynandra</i> L.	wild spider flower	non-native	rare
CARICACEAE (Papaya Family)			
<i>Carica papaya</i> L.	papaya	non-native	rare
CASUARINACEAE (She-oak Family)			
<i>Casuarina equisetifolia</i> L.	common ironwood	non-native	common
CLUSIACEAE (Mangosteen Family)			

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<i>Clusia rosea</i> Jacq.	autograph tree	non-native	rare
COMBRETACEAE (Indian Almond Family)			
<i>Terminalia catappa</i> L.	Indian almond	non-native	uncommon
CONVOLVULACEAE (Morning Glory Family)			
<i>Ipomoea alba</i> L.	moon flower	non-native	rare
<i>Ipomoea indica</i> (J. Burm.) Merr.	koali awahia	indigenous	rare
<i>Ipomoea obscura</i> (L.) Ker-Gawl.	-----	non-native	rare
<i>Ipomoea triloba</i> L.	little bell	non-native	uncommon
CRASSULACEAE (Stonecrop Family)			
<i>Crassula ovata</i> (P. Miller) Druce	jade plant	non-native	rare
CUCURBITACEAE (Gourd Family)			
<i>Momordica charantia</i> L.	bitter melon	non-native	uncommon
EUPHORBIACEAE (Spurge Family)			
<i>Aleurites moluccana</i> (L.) Willd.	kukui	Polynesian	rare
<i>Chamaesyce hirta</i> (L.) Millsp.	hairy spurge	non-native	rare
<i>Chamaesyce hypericifolia</i> (L.) Millsp.	graceful spurge	non-native	uncommon
<i>Chamaesyce prostrata</i> (Aiton) Small	prostrate spurge	non-native	rare
<i>Codiaeum variegatum</i> (L.) Blume	croton	non-native	rare
<i>Euphorbia antiquorum</i> L.	Malayan spurge tree	non-native	rare
<i>Euphorbia heterophylla</i> L.	kaliko rose-flowered	non-native	uncommon
<i>Jatropha integerrima</i> N. Jacq.	jatropha	non-native	rare
<i>Manihot glaziovii</i> Moll. Arg.	ceara rubber tree	non-native	uncommon
<i>Phyllanthus debilis</i> Klein ex Willd.	niruri	non-native	common
<i>Ricinus communis</i> L.	Castor bean	non-native	rare
FABACEAE (Pea Family)			
<i>Acacia confusa</i> Merr.	Formosa koa	non-native	rare

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<i>Caesalpinia bonduc</i> (L.) Roxb.	kakalaioa	indigenous	rare
<i>Canavalia cathartica</i> Thouars	maunaloa	non-native	uncommon
<i>Chamaecrista nictitans</i> (L.) Moench	partidge pea	non-native	common
<i>Crotalaria incana</i> L.	fuzzy fattlepod	non-native	rare
<i>Crotalaria pallida</i> Aiton	smooth rattlepod	non-native	common
<i>Desmanthus pernamhucanus</i> (L.) Thellung	slender mimosa	non-native	rare
<i>Desmodium incanum</i> DC.	kaimi clover	non-native	rare
<i>Desmodium intortum</i> (Mill.) Urb.	-----	non-native	rare
<i>Desmodium tortuosum</i> (Sw.) DC.	Florida beggarweed	non-native	common
<i>Desmodium triflorum</i> (L.) DC.	-----	non-native	uncommon
<i>Erythrina variegata</i> L.	tiger claw	non-native	rare
<i>Falcataria moluccana</i> (Mig.) Barneby & Grimes	albizia	non-native	rare
<i>Indigofera suffruticosa</i> Mill.	inikō	non-native	uncommon
<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	non-native	uncommon
<i>Macroptilium lathyroides</i> (L.) Urb.	wild bean	non-native	uncommon
<i>Mimosa pudica</i> L.	sensitive plant	non-native	uncommon
<i>Neonotonia wightii</i> (Wight & Arnott) Lackey	tineroo	non-native	rare
<i>Samanea saman</i> (Jacq.) Merr.	monkeypod	non-native	rare
<i>Senna occidentalis</i> (L.) Link	coffee senna	non-native	uncommon
GOODENIACEAE (Goodenia Family)			
<i>Scaevola taccada</i> (Gaertn.) Roxb.	naupaka kahakai	indigenous	uncommon
LAMIACEAE (Mint Family)			
<i>Ocimum basilicum</i> L.	sweet basil	non-native	rare
LAURACEAE (Laurel Family)			
<i>Cassytha filiformis</i> L.	kauna'oa pehu	indigenous	rare

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<i>Persea americana</i> Mill.	avocado	non-native	rare
MALVACEAE (Mallow Family)			
<i>Hibiscus x rosa-sinensis</i>	hybrid hibiscus	non-native	rare
<i>Sida rhombifolia</i> L.	Cuban jute	non-native	rare
MELASTOMATACEAE (Melastome Family)			
<i>Dissotis rotundifolia</i> (J.E. Smith) Triana	dissotis	non-native	rare
MENISPERMACEAE (Moonseed Family)			
<i>Cocculus orbiculatus</i> (L.) DC.	huehue	indigenous	rare
MORACEAE (Mulberry Family)			
<i>Ficus microcarpa</i> L.fil.	Chinese banyan	non-native	uncommon
MORINGACEAE (Drumstick Tree Family)			
<i>Moringa oleifera</i> Lamarck	drumstick tree	non-native	rare
MYRSINACEAE (Marlberry Family)			
<i>Ardisia elliptica</i> Thunberg	inkberry	non-native	rare
MYRTACEAE (Myrtle Family)			
<i>Eucalyptus deglupta</i> Blume	rainbow eucalyptus	non-native	rare
<i>Psidium guajava</i> L.	guava	non-native	uncommon
<i>Syzygium cumini</i> (L.) Skeels	Java plum	non-native	uncommon
<i>Syzygium malaccense</i> (L.) Merr. & Perry	mountain apple, 'ohi'a 'ai	Polynesian	rare
NYCTAGINACEAE (Four-o'clock Family)			
<i>Bougainvillea spectabilis</i> Willd.	bougainvillea	non-native	rare
PASSIFLORACEAE (Passion Flower Family)			
<i>Passiflora edulis</i> Sims	passion fruit	non-native	rare
<i>Passiflora foetida</i> L.	love-in-a-mist	non-native	rare
PIPERACEAE (Pepper Family)			

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<i>Piper auritum</i> Kunth	false awa	non-native	rare
POLYGALACEAE (Milkwort Family)			
<i>Polygala paniculata</i> L.	-----	non-native	rare
PROTEACEAE (Protea Family)			
<i>Macadamia integrifolia</i> Maiden & Betche	macadamia nut	non-native	rare
RUBIACEAE (Coffee Family)			
<i>Hedyotis corymbosa</i> (L.) Lam.	-----	non-native	rare
<i>Morinda citrifolia</i> L.	noni	Polynesian	uncommon
<i>Richardia brasiliensis</i> Gomes	-----	non-native	rare
RUTACEAE (Rue Family)			
<i>Citrus aurantiifolia</i> (Christman) Swingle	lime	non-native	rare
SCROPHULARIACEAE (Figwort Family)			
<i>Russelia equisetiformis</i> Schlect. & Chamisso	coral plant	non-native	rare
STERCULIACEAE (Cacao Family)			
<i>Waltheria indica</i> L.	'uhaloa	indigenous	rare
TURNERACEAE (Turnera Family)			
<i>Turnera ulmifolia</i> L.	yellow alder	non-native	rare
ULMIFOLIA (Elm Family)			
<i>Trema orientalis</i> (L.) Blume	gunpowder tree	non-native	common
VERBENACEAE (Verbena Family)			
<i>Lantana camara</i> L.	lantana	non-native	rare
<i>Strachytarpheta cayennensis</i> (Rich.) Vahl	nettle-leaved vervain	non-native	uncommon
<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Jamaica vervain	non-native	rare
<i>Vitex trifolia</i> L.	blue vitex	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through fauna survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species abundance, activities and location as well as observations of trails, tracks scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

MAMMALS

Three species of mammals were observed in the project area during two visits. Taxonomy and nomenclature follow Tomich (1986).

Mongoose (*Herpestes auropunctatus*) - A few mongoose were seen on the margins of the landfill and along the road searching for birds, insects and roadkill.

Domestic Cat (*Felis catus*) - One cat was observed in the landfill during the evening portion of the survey.

Dog (*Canis familiaris*) - Dogs were heard barking in the vicinity of the property but were not seen. The landfill managers reported that people occasionally dump unwanted animals here.

While not seen during the survey rats (*Rattus rattus*) and mice (*Mus musculus*) are expected to occupy this property. Rats and mice feed on herbaceous vegetation, fruits and seeds and would scavenge for anything left uncovered at the landfill.

A special effort was made to look for any occurrence of the native Hawaiian hoary bat by making an evening survey of the area. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though flying insects were present and visibility was excellent. Bats have not previously been reported from this area.

BIRDS

Birdlife was moderate in both diversity and numbers on this property. Eleven species of birds were seen during two visits to the property. These included nine introduced birds, one indigenous seabird and one migratory bird species. Taxonomy and nomenclature follow American Ornithologists' Union (2005).

Zebra dove (*Geopelia striata*) – These small doves were common throughout the property feeding in small flocks in clearings.

Common myna (*Acridotheres tristis*) – Pairs of mynas were common throughout the property and flying overhead.

House finch (*Carpodacus mexicanus*) – Several pairs and small flocks were seen in flight and within the ironwood trees.

Spotted dove (*Streptopelia chinensis*) – Several individuals of these large doves were seen flying across the property and feeding in clearings.

House sparrow (*Passer domesticus*) – A few pairs of these small birds were seen in small trees and heard calling. They often frequent structures and parked equipment.

Hwamei (*Garrulax canorus*) – Several of these secretive birds were heard calling from dense vegetation. Their protracted warbling is distinctive and beautiful.

Japanese white-eye (*Zosterops japonica*) – Several pairs of these small green birds were seen and heard twittering in small trees where they feed on nectar and insects.

Kolea, Pacific golden-plover (*Pluvialis fulva*) – Several individuals were seen during the day and one small flock gathered in the landfill clearing during the evening. These migratory birds spend their summer months breeding in the arctic and their winter months in Hawaii and other tropical areas.

'Iwa, Great frigatebird (*Fregata minor palmerstoni*) – Three 'iwa were seen cruising over the coastline during the evening survey. These large indigenous seabirds waylay other incoming seabirds to relieve them of their days catch.

Northern cardinal (*Cardinalis cardinalis*) – Three of these red birds were seen in trees around the landfill and heard making their high pitched chipping calls.

Red-crested cardinal (*Paroaria coronata*) – One pair of these red-headed cardinals was seen and heard in a tree near the land fill clearing.

Other bird species could be expected to occasionally utilize this habitat. These include such species as the cattle egret (*Bubulcus ibis*), nutmeg mannikin (*Lonchura punctulata*) and the rock dove (*Columba livia*). This habitat is not expected to support Hawai'i's native forest birds because of the disturbed nature of the forest and the presence of mosquito borne avian diseases that severely affect them.

INSECTS

While insects in general were not tallied, they were abundant throughout the area and fueled the bird life observed. One native Sphingid moth, Blackburn's sphinx moth (*Manduca blackburni*) has been put on the Federal Endangered species list and this designation requires special focus (USFWS 2000). Blackburn's sphinx moth is known to occur in parts of East Maui and Central Maui but is not presently known from the Hāna area. Its native host plants are species of 'aiea (*Nothocestrum spp.*) and non-native alternative host plants are tobacco (*Nicotiana tabacum*) and tree tobacco (*Nicotiana glauca*). None of these plants were found on the property, and no Blackburn's sphinx moth or their larvae were seen.

CONCLUSIONS AND RECOMMENDATIONS

Fauna surveys are seldom comprehensive due to the short window of observation, the seasonal nature of animal activities and the usually unpredictable nature of their daily movements. This survey, however, should be considered fairly representative due to the abundance of food resources present throughout the area and the resulting level of animal use. No native forest birds occur anywhere in the vicinity of this property. All of the other bird species are widespread and common and of no particular environmental concern.

No Federally Endangered or Threatened species were encountered during the course of the survey and no special habitats were identified. The proposed changes in land use should have no significant negative impact on the fauna resources in this part of Maui.

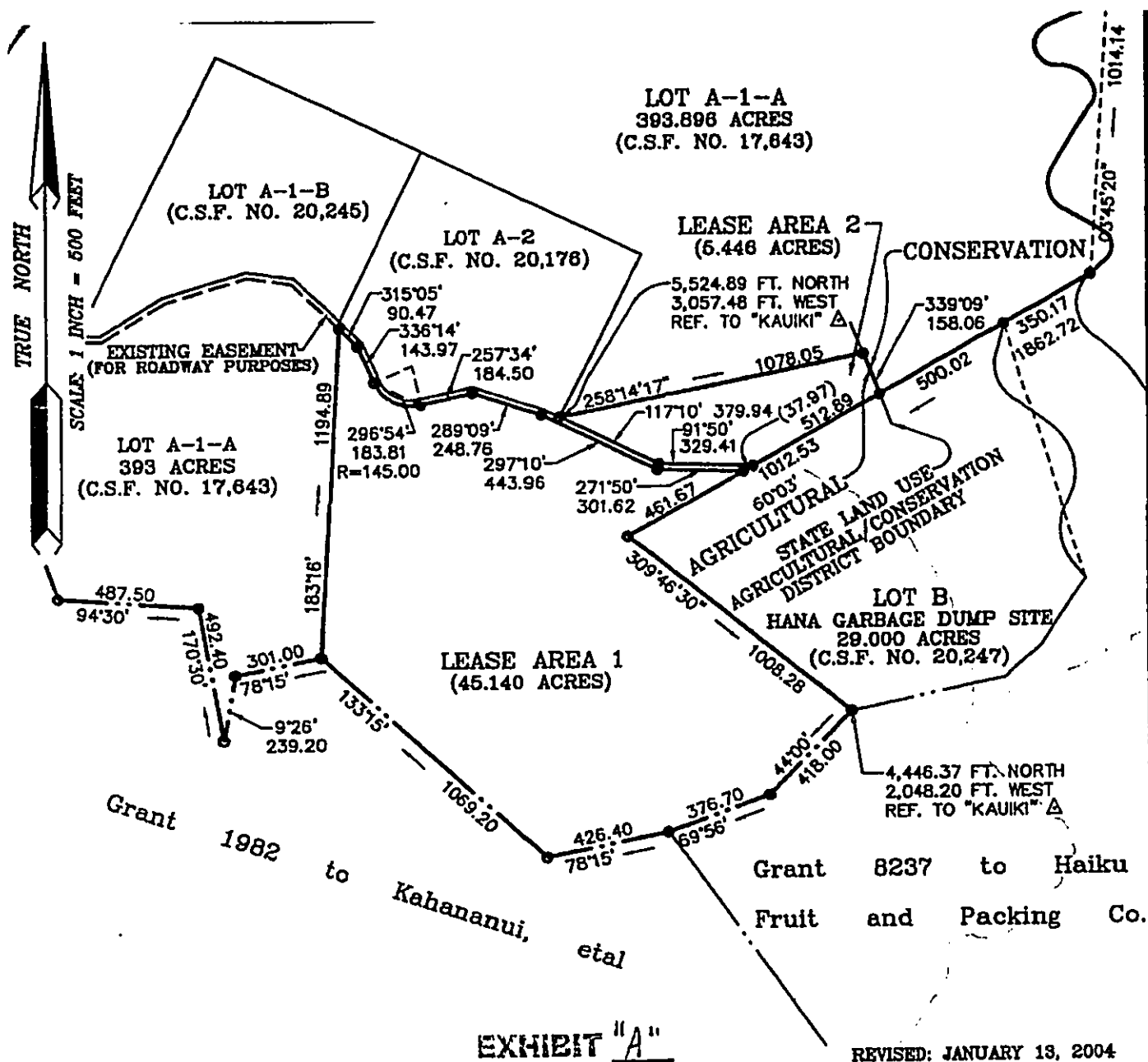
No special recommendations are deemed necessary or appropriate with regard to the fauna resources on this property.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within two groups: Mammals and Birds. For each species the following information is provided:

1. Common name
2. Scientific name
3. Bio-geographical status. The following symbols are used:
 - endemic = native only to Hawaii; not naturally occurring anywhere else in the world.
 - indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
 - non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.
 - migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.
4. Abundance of each species within the project area:
 - abundant = many flocks or individuals seen throughout the area at all times of day.
 - common = a few flocks or well scattered individuals throughout the area.
 - uncommon = only one flock or several individuals seen within the project area.
 - rare = only one or two seen within the project area.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>	<u>ABUNDANCE</u>
<u>MAMMALS</u>			
Mongoose	<i>Herpestes auropunctatus</i>	non-native	uncommon
Cat	<i>Felis catus</i>	non-native	rare
Dog	<i>Canis familiaris</i>	non-native	rare
<u>BIRDS</u>			
Zebra dove	<i>Geopelia striata</i>	non-native	common
Spotted dove	<i>Streptopelia chinensis</i>	non-native	common
House finch	<i>Carpodacus mexicanus</i>	non-native	common
Common myna	<i>Acridotheres tristis</i>	non-native	common
Hwamei	<i>Garrulax canorus</i>	non-native	uncommon
House sparrow	<i>Passer domesticus</i>	non-native	uncommon
Japanese white-eye	<i>Zosterops japonica</i>	non-native	rare
'Iwa, Great frigatebird	<i>Fregata minor palmerstoni</i>	indigenous	rare
Kolea, Pacific golden-plover	<i>Pluvialis fulva</i>	migratory	rare
Red-crested cardinal	<i>Paroaria coronata</i>	non-native	rare
Northern cardinal	<i>Cardinalis cardinalis</i>	non-native	rare



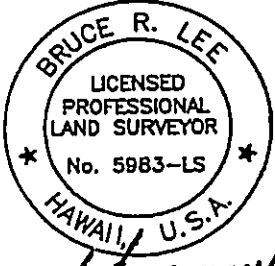
 <p><i>Bruce R. Lee 03/04/04</i></p> <p>THIS PLAT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.</p>	PLAT SHOWING LEASE AREA 1 AND 2 AFFECTING LOT A-1-A OF THE GOVERNMENT LANDS OF KAWAIPAPA AND WAKIU IN FAVOR OF LOT B HANA GARBAGE DUMP SITE SITUATED AT KAWAIPAPA & WAKIU, HANA, MAUI, HAWAII	
	PREPARED FOR: COUNTY OF MAUI SOLID WASTE DIVISION 200 S. HIGH STREET, 4TH FLOOR WAILUKU, HI 96793	PREPARED BY: NEWCOMER - LEE LAND SURVEYORS, INC. 1498 LOWER MAIN STREET, SUITE D, WAILUKU, MAUI, HAWAII 96793
T.M.K.:(2) 1-3-008: POR. 007 SCALE: 1 INCH = 500 FEET DATE: MARCH 24, 2003 SHT. 2 OF 2 SHTS.		

Figure 1 - Project Area

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APPENDIX G.

Archaeological Assessment Report

**AN ARCHAEOLOGICAL ASSESSMENT OF PORTIONS
OF THE HANA LANDFILL AND ADJACENT STATE
LAND IN KAWAIPAPA *AHUPUA`A*,
HANA DISTRICT, ISLAND OF MAUI
(TMK: 1-3-06: Parcel 12 and Portion of Parcel 7)**

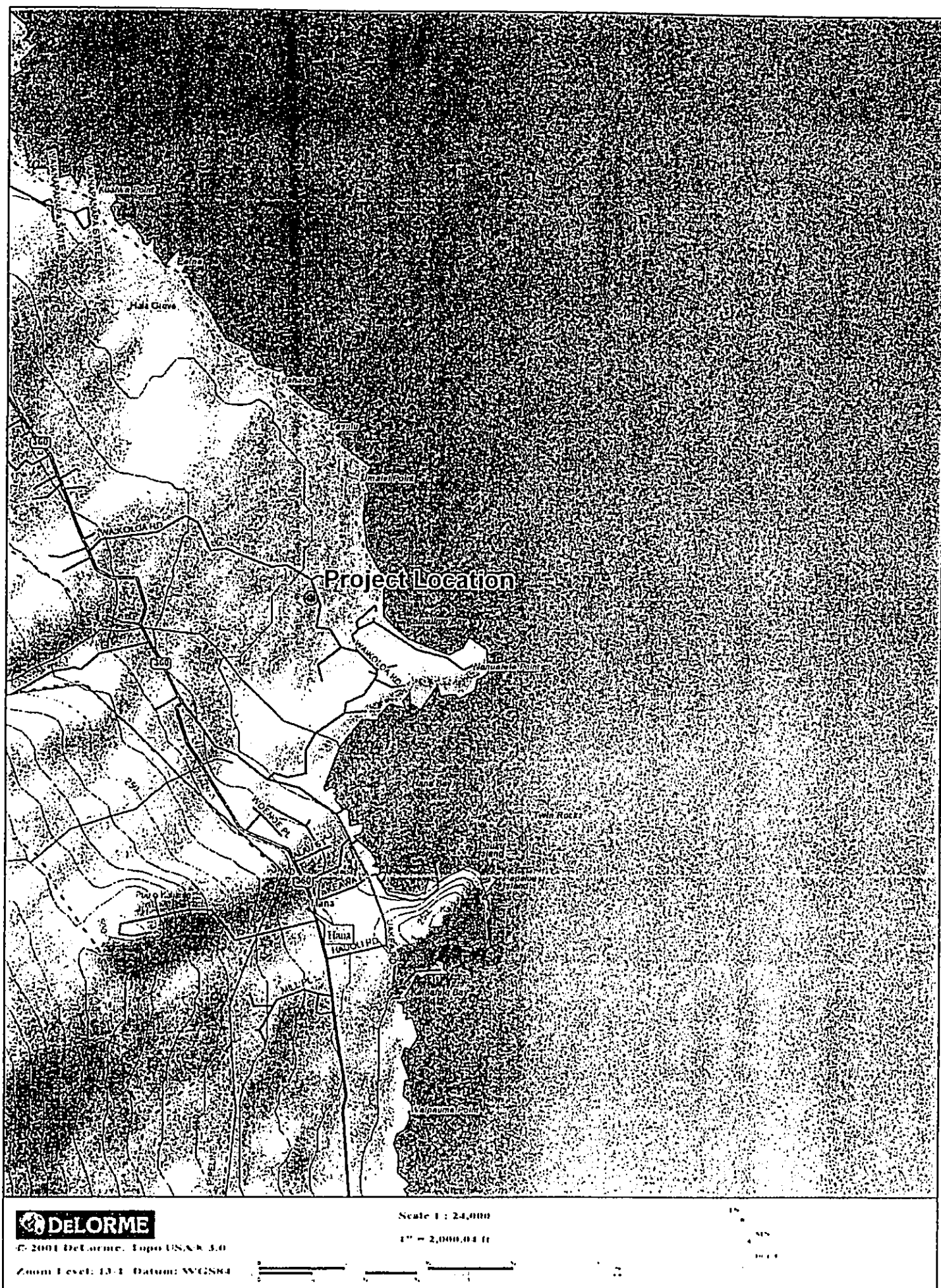
Prepared on behalf of:

**The Department of Public Works &
Environmental Management
County of Maui**

Prepared by:

**Xamanek Researches
Pukalani, Maui
Erik M. Fredericksen**

22 September 2003



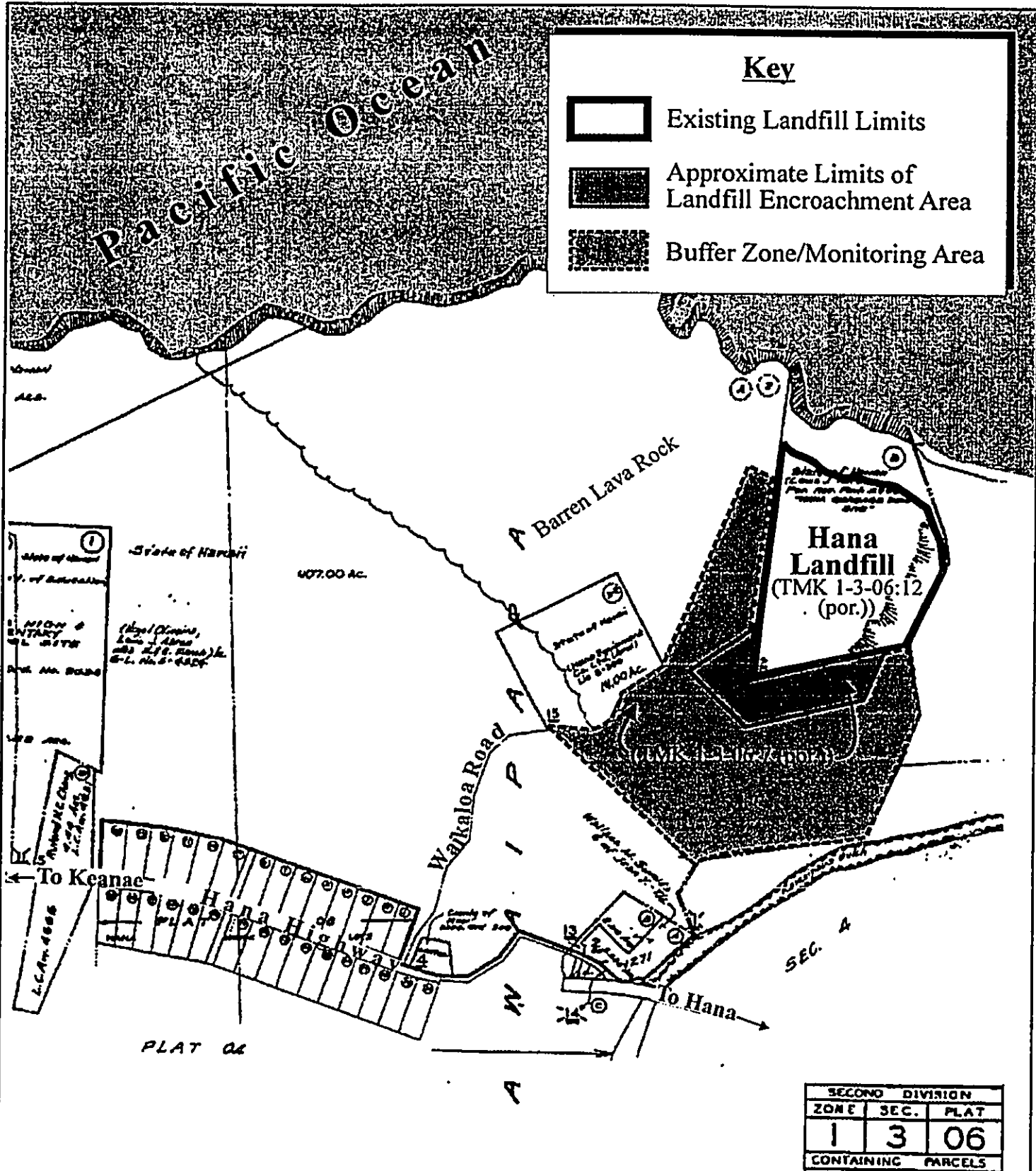


Figure 2

County of Maui's Hana Landfill Land Acquisition Site Location Map

NOT TO SCALE



Prepared for: County of Maui, Department of Public Works
and Environmental Management

MUNEKIYO HIRAGA, INC.

COMDPWHanaLPsiteLocation

INTRODUCTION

Mr. Michael Munekiyo of Munekiyo & Hiraga, Inc. contacted Xamanek Researches about a project at the Hana Landfill in January 2003. At this time, it was not known what level of work was necessary for the study parcel (Figures 1, 2 and 3). Proposed study areas included an encroachment on the southeastern side of the existing landfill that extended on to State land (TMK 1-3-006: Portion of Parcel 7) and the proposed white goods and car storage area (Figures 2 and 3). We contacted Dr. Melissa Kirkendall of the State Historic Preservation Division (SHPD), in order to discuss the appropriate level of study for the proposed project area. It was subsequently determined that an archaeological assessment would likely be sufficient, because the general area had been impacted by previous grading activities associated with landfill operations. We were asked to submit a proposal for the necessary work, and subsequently awarded the contract to carry out an archaeological assessment for the above noted areas.

The Hana Landfill facility is located in Kawaipapa *Ahupua'a*, Hana District, Island of Maui (TMK: 1-3-006: Parcel 12 and Portion of Parcel 7) [Figures 1 and 2; Photos 1-4]. As previously mentioned above, the study area is currently utilized as a landfill. The following report presents the results of our archaeological assessment for the study area.

THE STUDY AREA

Erik Fredericksen visited the project area on 24 July 2003 and met with Mr. James Perry of the Solid Waste Division of the County of Maui. In addition, Mr. Andrew Park, heavy equipment operator at the landfill, was very helpful and familiarized the author with the facility and the location of two gas monitoring wells (LP-1 and LP-2) and one water quality monitoring well (HL-1). These stations lie along the southeastern side of the existing facility, and are used to monitor potential negative impacts to the water table and the surrounding area.

The bulk of the fieldwork for this archaeological assessment was conducted on 26 July 2003. It is estimated that the study area ranges from c. 55 feet to 90 feet AMSL.

The project area is composed of relatively level *a'a* land, the bulk of which has been bulldozed and/or grubbed.

The study area essentially lies on an *a'a* flow that contains generally thin soil cover. Undisturbed portions of land adjacent to the project area and some previously cleared sections to the south of the study area are generally heavily vegetated. However, grubbing and grading actions associated with County landfill operations appear to have impacted the entire assessment project area. The bulk of the plants observed in the vicinity of the survey area consisted of non-native species, including grasses and annual weeds near the ground surface, with ironwood (*Casuarina equisetifolia*) trees dominating the overstory where trees are present. However, isolated *kukui* (*Aleurites moluccana*) and *hala* (*Pandanus tectorius*) trees were noted in some areas as well. In addition, several varieties of landscaping plants—including avocado and Monkeypod (*Albizia saman*) trees—were noted in the vicinity of the maintenance workers' utility area that is near gas monitoring well LP-1.

It was evident at the time of the surface inspection that the study area had been previously disturbed. During our walkover, scattered modern materials were observed on the existing surface. In addition, abandoned vehicles were noted in the vicinity of the LP-1 monitoring well. Finally, recently imported cinder fill material was noted on much of the property. This imported material is utilized on a daily basis to cover refuse in the landfill facility.

The Hana Landfill property (Parcel 12) borders the ocean on the northwestern side and State land essentially bounds the County property elsewhere. State Parcel 7 lies *mauka* (east) of the landfill parcel. A County road—Waikaloa Road—crosses the landfill property in a northeast/southwest manner. It is estimated that this portion of Maui receives between 100 and 120 inches of annual precipitation.

BACKGROUND INFORMATION

Previous Archaeology in the general area

As a whole, there has been relatively little archaeological investigation in the culturally rich Hana region. There has been no previously documented archaeological work carried out on the County of Maui Hana Landfill parcel or the adjacent State parcel. The nearest known sites consist of Kauleilepo Heiau (SIHP 50-50-13-110), Kauleiula Heiau (Site 109), Waikoloa Platform (Site 107), and Kaianalimu habitation site (Site 1491). In addition, a post-contact cemetery lies well south of the landfill project area on the southern side of Kawaipapa Gulch.

The closest archaeological investigation was carried out in 1984 on a c. 14-acre parcel of land (Landrum, 1984). There were no significant precontact cultural resources located during this reconnaissance level investigation.

The nearest archaeological inventory survey in the *ahupua'a* of Kawaipapa was carried out on a parcel that lies nearly 1 km to the southeast (*mauka*) of the landfill study area. This inventory survey was conducted by PHRI in 1993 for the Hana Medical Center parcel (Henry and Graves, 1993). This study located four sites—two complexes (Site 3150 and Site 3153), and two boundary walls (Site 3151 and Site 3152). Sites 3150 and 3153 were interpreted as temporary habitation areas that appeared to have been utilized periodically, possibly during the plantation era. All sites were interpreted as post-contact features.

The next closest inventory survey was conducted for the Hana Fire Station complex in 1993 by Xamanek Researches. This parcel of land lies slightly farther to the southeast of the Hana Landfill project area. There were no significant material culture remains encountered during testing on this previously disturbed portion of land (Fredericksen et al., 1993).

Richard Pearson (1970) carried out a reconnaissance survey of Wai'anapanapa State Park in 1969. He identified 34 archaeological features within the park, including a *heiau*, a trail, a petroglyph, five shelter caves, six *ahu*, two U-shaped enclosures, three shelter walls, two *hale* platforms, and several walls and enclosures. The park lies c. 3 km to the north of the current landfill project area.

Settlement Pattern and Land Use

Previous archaeological work in the general vicinity of the project area suggests that the coastal portion of Maui was likely utilized in precontact times for habitation, coastal marine exploitation and ceremonial purposes (Fredericksen et al., 1993; Henry and Graves, 1993; Kirch, 1985; Pearson, 1970). However, it appears unlikely that this rugged inland portion of the Hana coast was heavily utilized for post-contact ranching activities, because it contains little soil and is very rocky.

Expected Site Types in Study Area

Given that the project area is located on a rough *a'a* flow and has been previously impacted by clearing actions associated with landfill operations, we did not anticipate finding any significant material culture remains, with the possible exception of remnants of trails and/or ranch-era walls.

FIELD METHODS

A pedestrian inspection of the study area was undertaken on 26 July 2003. Pedestrian sweeps were spaced c. 5 meters apart and paralleled the contour of the existing built-up portion of the landfill. Surface visibility ranged from fair to good, and was dependent upon vegetative cover. Written notes were kept and photographs were taken with a digital camera. Erik Fredericksen and David Paul carried out the assessment-level fieldwork. Erik Fredericksen was also the project director for this archaeological study. There was no subsurface testing was conducted for the Hana Landfill archaeological assessment study. However, it was possible to inspect cuts in graded and grubbed portions of the project area.

RESULTS

There were no significant material culture remains noted during the inspection of the very rocky surface of the Hana Landfill parcel. In addition, there were no significant above ground structural remains noted in the areas adjacent to the project. Given the rough surrounding *a`a* terrain, it does not appear likely that the immediate study area was substantially utilized by precontact Hawaiians or during the post-contact sugar and ranch eras. In addition, the level of previous disturbance has likely eliminated any evidence of former land use on the project area.

SUMMARY AND CONCLUSIONS

Based on the results of the walkover, it does not appear likely that significant material culture remains are contained on the current project area. In addition, the area has been heavily impacted by ongoing landfill operations, and it is unlikely that any sites—if there were any present—have survived.

Mitigation Recommendations

Given the location of the area covered by this archaeological assessment and the degree of mechanical alteration, no further work is recommended for the present study area. However, it is important to note that the *makai* portion of the County of Maui landfill parcel fronts the Hana coast. While this area was not inspected because it lies well outside the existing project area, it is very likely that significant cultural resources are present. In addition, the landfill encroachment area lies on a portion of State Parcel 7. This overall parcel extends well *mauka* of the present project area, and does not appear to have been impacted by earthmoving activities associated with ongoing landfill operations. There has been no previous archaeological inventory work carried out on this State parcel.

It is recommended that the State Historic Preservation Division evaluate any future County of Maui landfill expansion proposals. It may be necessary to conduct archaeological inventory survey level investigation on any unaltered portions of the County landfill Parcel 12 or the State Parcel 7. It is further recommended that the County not expand the landfill facility towards the ocean.

References

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Chris Hart and Partners, Kahului, Maui. Prepared by
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Hawaii.



Photo 1 – Hana Landfill, in vicinity of LP-1 monitoring well. View to the northeast.



Photo 2 – Portion of State Parcel 7 landfill encroachment. View to the southeast.

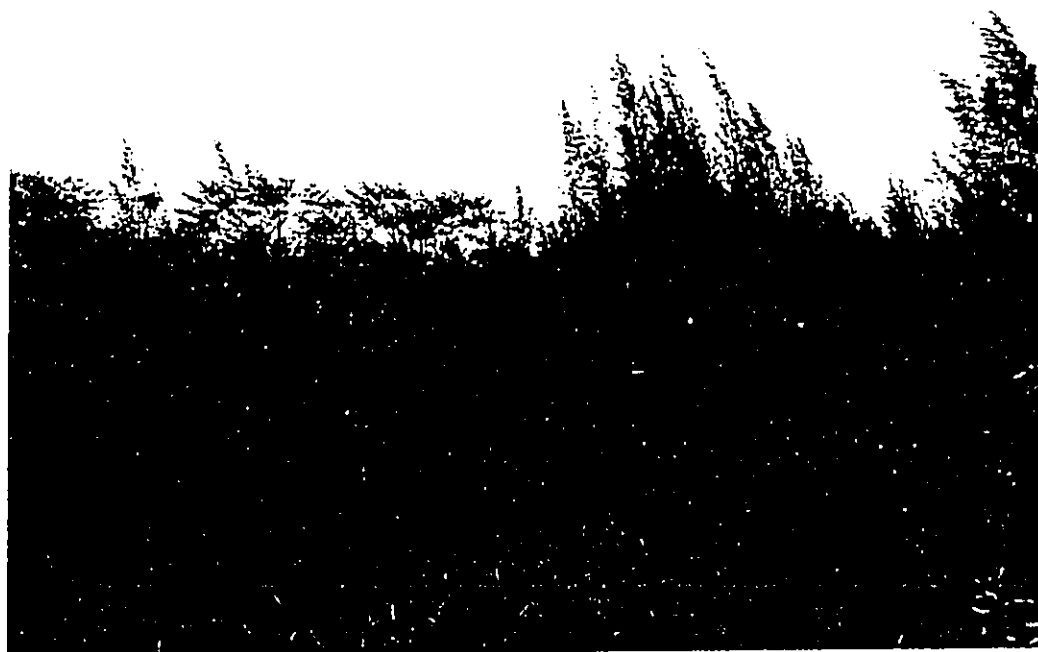


Photo 3 – Previously cleared area near HL-1 monitoring well. View to the northeast.



Photo 4 – Area in vicinity of active landfill shown on the upper right. View to the southeast.

APPENDIX G-1.

**State Historic Preservation
Division No Effect
Determination Letter, May
10, 2004**

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

MAY 13 2004

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 10, 2004

Mr. Mitch Hirano
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2004.1449
DOC NO: 0405CD04

Dear Mr. Hirano,

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Draft Environmental Assessment (EA) for the Proposed County of Maui's Hana Landfill Land Acquisition
Kawaipapa Ahupua'a, Hana District, Island of Maui
TMK: (2) 1-3-006:012 and por. of 007**

Thank you for the opportunity to review and comment on the Draft EA for the proposed County of Maui's Hana Landfill Land Acquisition, which was received by our staff on March 20, 2004.

Based on the submitted Draft EA, we understand the County of Maui, Department of Public Works and Environmental Management (DPWEM), Solid Waste Division, is planning to expand the limits of the Hana Landfill Facility. The DPWEM is in the process of acquiring adjacent lands from the State of Hawaii to incorporate an area of landfill encroachment. The DPWEM is seeking to acquire a portion of parcel 007 to include a buffer zone surrounding the landfill area.

In 2003 Xamanek Researches Inc. conducted an archaeological assessment of the subject properties. We have reviewed and accepted the report documenting the negative findings (*An Archaeological Assessment of Portions of the Hana Landfill and Adjacent State Land in Kawaipapa Ahupua'a, Hana District, Island of Maui* [TMK: 1-3-06: Parcel 12 and Portion of Parcel 7] Fredericksen 2003) (SHPD DOC NO.: 0310MK29/LOG NO.: 2003.2184).

Given the above information, we believe there will be "no historic properties affected" by the proposed undertaking. However, we request the opportunity to review future permitted actions involving the County of Maui landfill expansion as other portions of parcels 007 and 012 are currently unaltered. Expansion into these areas may warrant additional work, including an archaeological inventory survey.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

Aloha,

P. Holly McEldowney
P. Holly McEldowney, Administrator
State Historic Preservation Division

CD:jen

c: Michael Foley, Director, Dept of Planning, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793

APPENDIX H.

**State Land Use Commission
District Boundary
Interpretation No. 03-35**

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, Hawaii 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

December 4, 2003

DEC 05 2003

ANTHONY J.H. CHING
EXECUTIVE OFFICER

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: Boundary Interpretation No. 03-35
Tax Map Key No: 1-3-06: por. 7 and 12
Kawaipapa and Wakiu, Hana, Maui, Hawaii

Pursuant to your letter dated October 8, 2003, requesting a boundary interpretation for the subject parcels, please be advised that we have determined an approximate location of the State Land Use (SLU) Agricultural/Conservation District boundary.


Our determination is based on review of the Commission's records and official maps currently on file at our office and the map that you provided. For your information, the Agricultural/Conservation District boundary was established during the 1969 Five-Year Boundary Review.

A copy of your map with an approximate location of the SLU Agricultural/Conservation District boundary delineated is enclosed for your reference.

Mr. Mich Hirano
December 4, 2003
Page 2

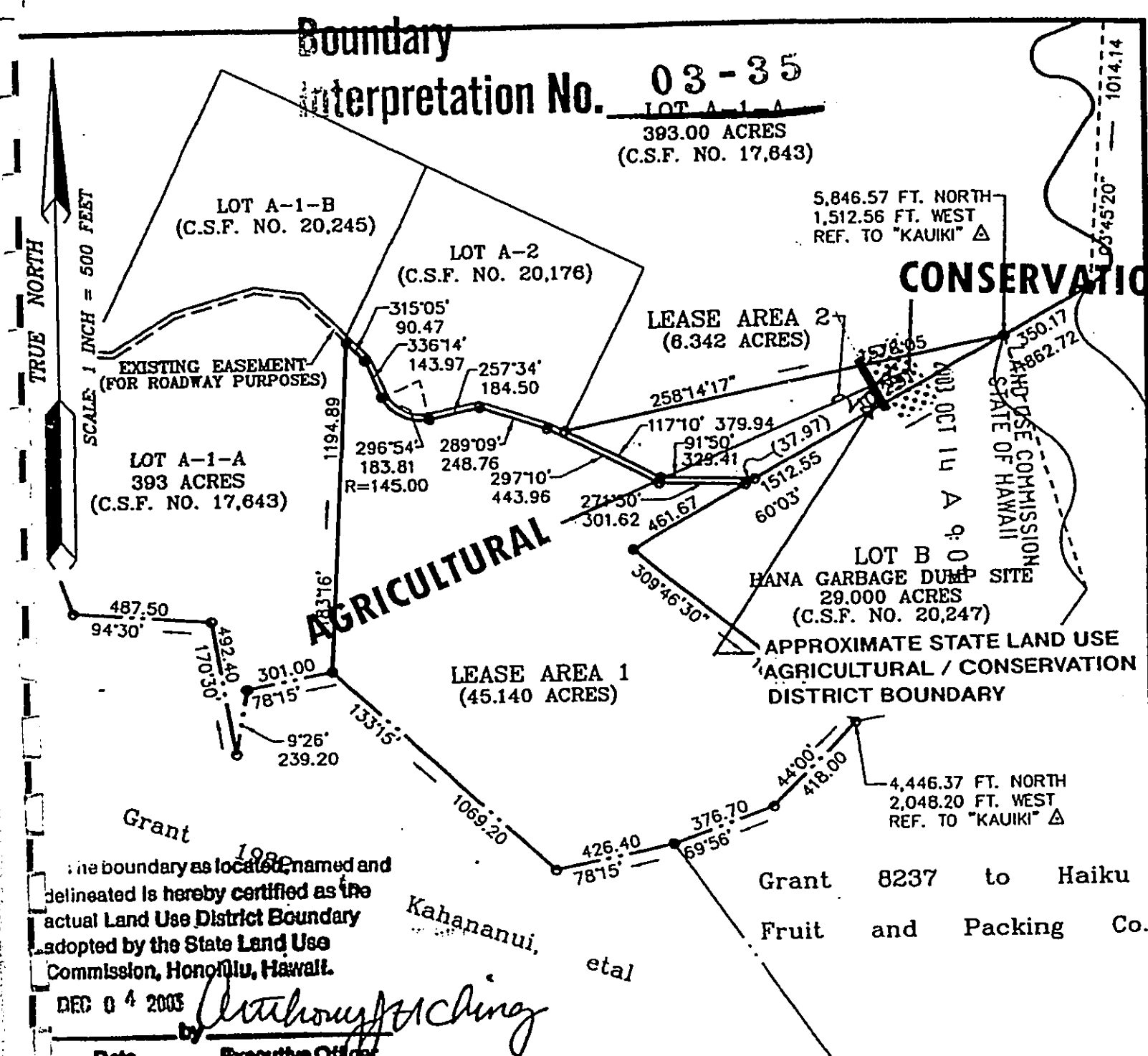
Should you require clarification or further assistance, please feel free to call Fred Talon or Bert Saruwatari of my staff at 587-3822.

Sincerely,


ANTHONY J. H. CHING
Executive Officer

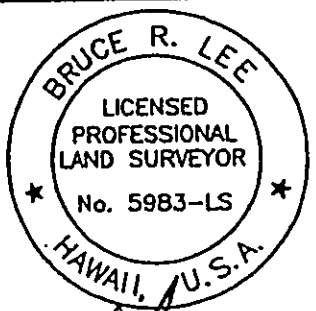
Enclosure: Boundary Interpretation Map dated December 4, 2003

- c: Peter Young, BLNR Chairperson (w/enclosure)
Attn: Dierdre F. Mamiya, Land Division
Michael Foley, Planning Director, County of Maui Planning Department (w/enclosure)
Melvin Kanaha, Real Property Tax Supervisor, County of Maui (w/enclosure)
Attn: Dawn Mattney, Mapping Section
Elaine Baker, County of Maui Department of Public Works and Environmental
Management, Solid Waste Division (w/enclosure)



Grant
The boundary as located, named and delineated is hereby certified as the actual Land Use District Boundary adopted by the State Land Use Commission, Honolulu, Hawaii.

DEC 04 2003
Date by *Anthony H. Ching*
Executive Officer



Bruce R. Lee
THIS PLAT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

PLAT SHOWING
LEASE AREA 1 AND 2 AFFECTING LOT A-1-A
OF THE GOVERNMENT LANDS OF KAWAIPAPA AND WAKIU
IN FAVOR OF LOT B HANA GARBAGE DUMP SITE
SITUATED AT KAWAIPAPA & WAKIU, HANA, MAUI, HAWAII

PREPARED FOR: COUNTY OF MAUI SOLID WASTE DIVISION 200 S. HIGH STREET, 4TH FLOOR WAILUKU, HI 96793	PREPARED BY: NEWCOMER - LEE LAND SURVEYORS, INC. 1498 LOWER MAIN STREET, SUITE D, WAILUKU, MAUI, HAWAII 96793
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